

Balistes ^{*vidua*} ~~*atro marginatus, Gann.*~~ 442

D. 1-1-34; A. 29; P. 15; C. 1, 5, 5, 1.

Having collected many examples of this *Balistes* at three remote groups of islands, I observed two distinct forms which are probably sexual varieties. One is deeper, both anteriorly and posteriorly than the other, and the anal fin of the former, which contains several rays less, is also deeper anteriorly. The more slender variety, which we have figured, is thrice as long as the distance between the origin of its soft dorsal and anal fin. The dorsal outline is less arched than in the deeper fish, and, consequently the upper profile of the head is not so precipitate in its descent to the snout. The head comprises about a fourth of the total length, its upper line is moderately convex. The scales are small, closely granulated, and there exists no annulation on the caudal trunk. The eyes are oval, their length entering



five or six times in the length of the head. The pelvic bone is not quite so prominent as usual, is less asperous.

The dorsal spine, ^{which} in the more slender variety is shorter than the other, is robust, obtuse and asperous in front. The space between the origin of the two fins is longer than usual, being a triple more than the length of the head. The soft dorsal commences at a point exactly midway between the end of the snout and the tip of the tail. It extends over a base which is twice its own height, and the fin tapers rather rapidly posteriorly. The anterior upper margin is very slightly concave and somewhat rounded off behind. The anal is of a similar structure to the fin above, but shorter along its base. The deeper variety as before mentioned has a deeper anal, which is supported by fewer rays. The pectorals are small and rounded. The caudal trunk is also small, and the fin of moderate size.



convex behind and the corners
are triangularly produced.

Color deep violaceous black,
Irides cupreous. The enlarged hinder
end of the caudal trunk white. The
anterior dorsal membrane number.
Pectorals yellow, caudal with a
faint reddish tinge and edged above
and beneath with black. Dorsal
and anal white, margined with
black.

Length, 10 inches.

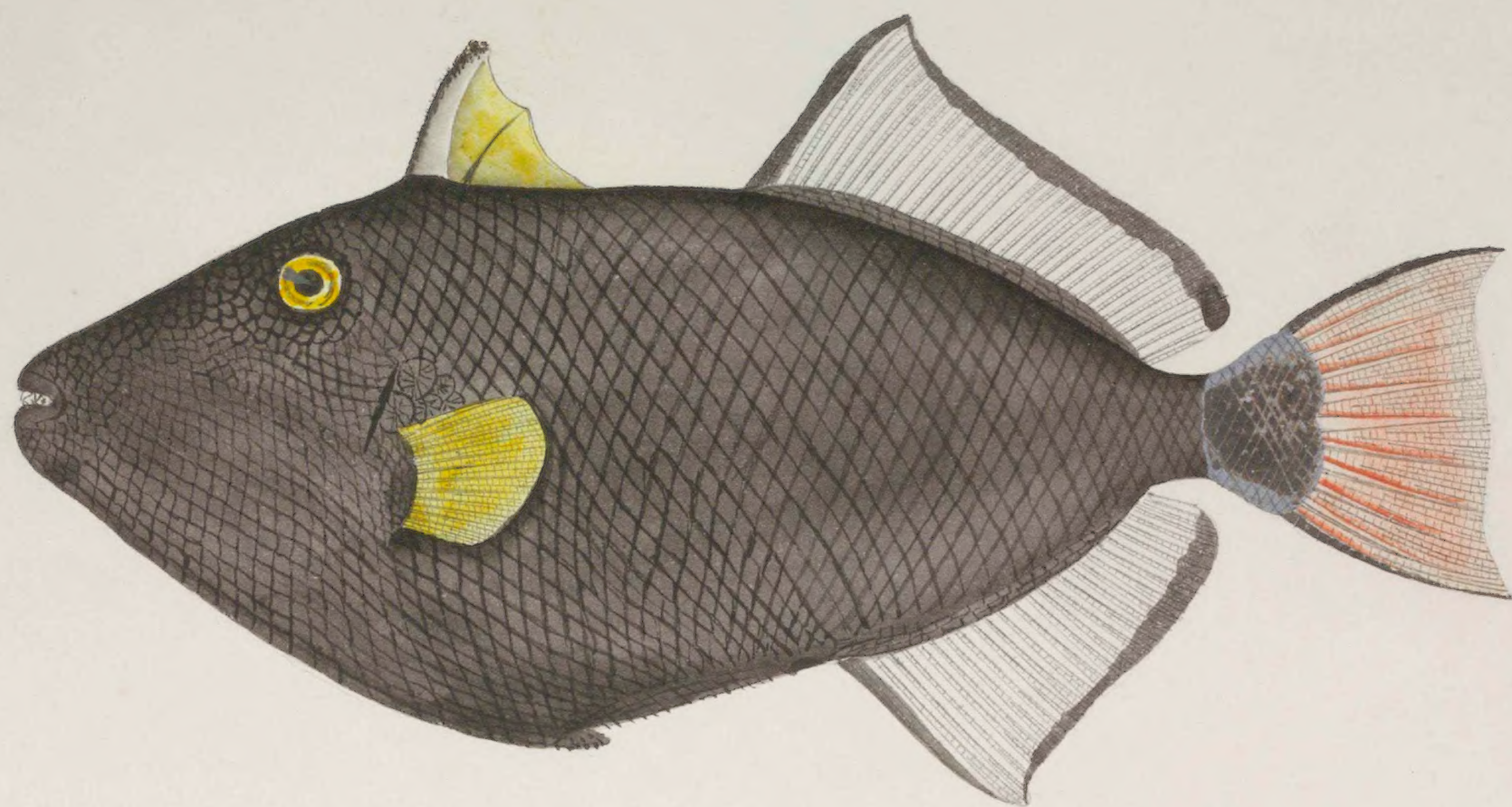
Habitat: Kingsmill Is. Society
Is. Sandwich Is.

At Tahiti the native name
of this species is "Oirira".



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Balistes vidua



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Balistes ^{*niger*} ~~*albomarginatus*~~, Garrett.

D. 1-2-28; A. 23; P. 13; C. 1, 5, 5, 1.

The head, as compared to the total length is as two to seven, and its upper profile is slightly convex. The eyes are oval, their length entering four and a half times in the length of the head, and one and a half between their own orbit and the base of the dorsal spine. The scales are rather small, closely granulated with acute papillae, which are directed posteriorly. Those on the hinder portion of the body and caudal trunk are furnished with small spines directed anteriorly and disposed in seven or eight horizontal rows. The depth of the body between the origin of the soft dorsal and anal is more than one-third the length of the fish.

The dorsal spine is nearly straight, scabrous, obtuse, and its hinder membrane is quite narrow. The soft dorsal is gently arched in outline, the height, less than half the length of its own base, which latter equals one-fourth the length of the whole fish. The anal is

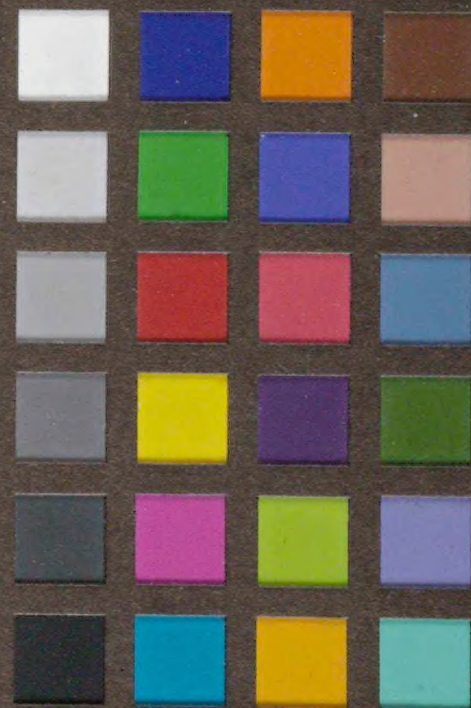
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cm



much deeper anteriorly and tapers more rapidly than the fin above. Pectorals rounded off at the corners. The caudal is biemarginate posteriorly. The end of the pelvic bone and the loose edge of the abdomen aculeated.

Color olivaceous brown. Snout, lower part of the head, breast and belly of a violet hue. A curved green band descends from the eye to the lower base of the pectorals. Frides golden yellow, margined with brown. The anterior dorsal membrane is amber yellow, shaded off with dusky. Caudal olivaceous brown, margined above, beneath and posteriorly with white. All the other fins have their basal halves ferruginous brown.

Length, 7 inches.

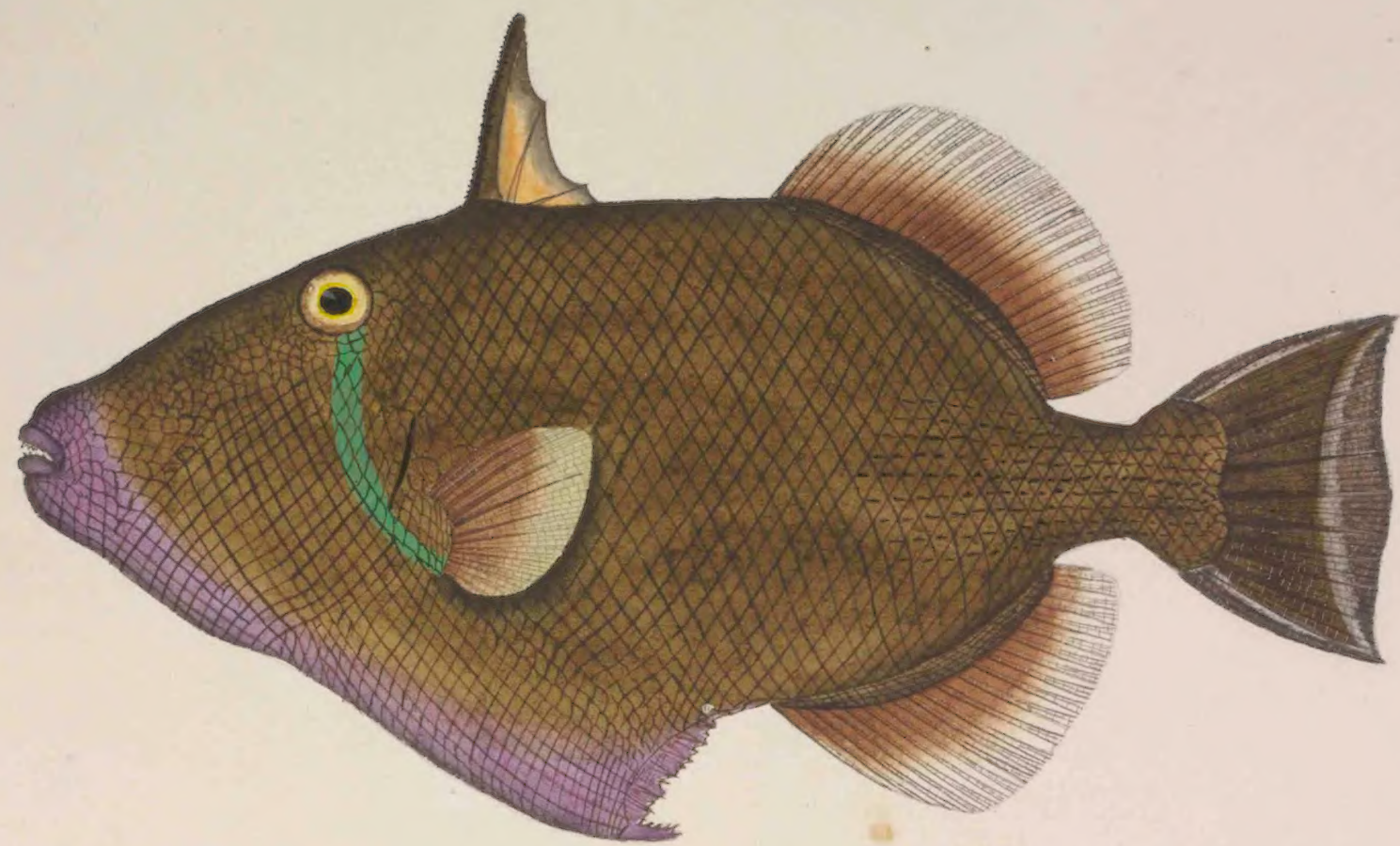
Habitat: Kingmill Is.

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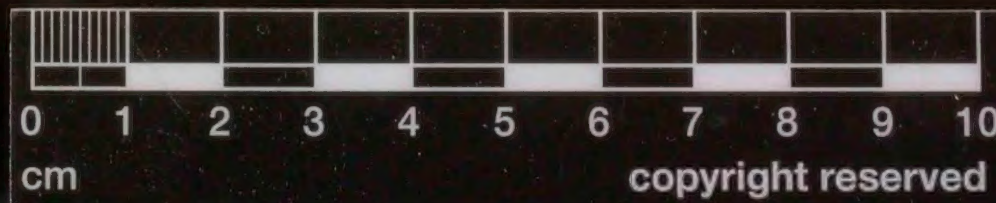
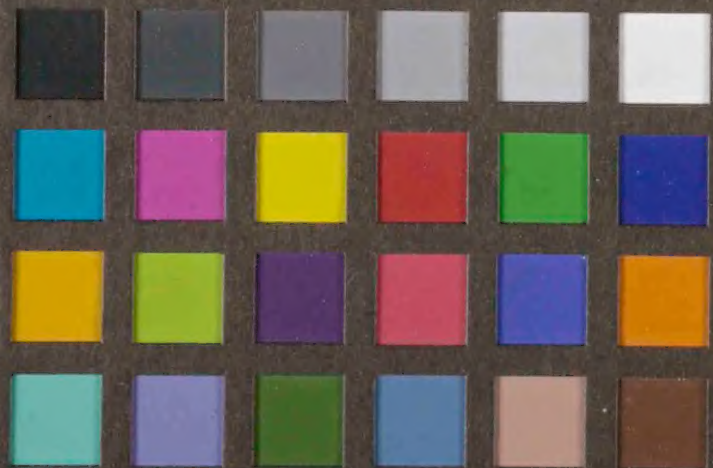


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Balistes niger



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Balistes ^{furcata} ~~scabriscula~~, garrothi

D. 1-2-28; A. 28; P. 13; C. 1, 5, 5, 1.

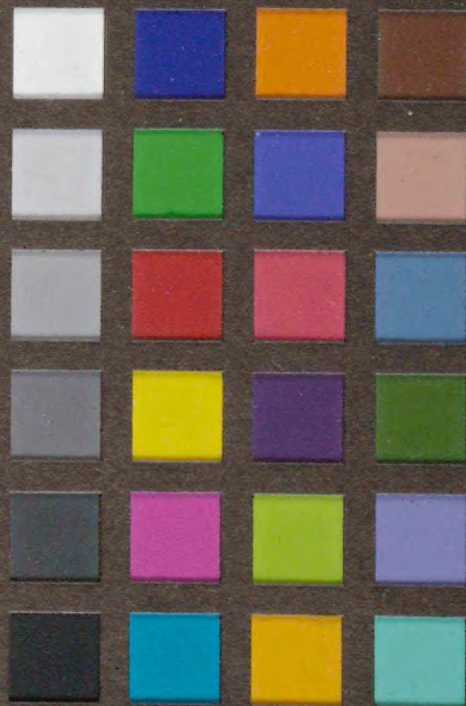
The head comprises about two-sevenths of the entire length, ^{and} the upper profile between the interocular space and the end of the snout is slightly concave. Eyes oval. The depth of the body between the origin of the soft dorsal and anal equals about or little more than one third of the entire length. Scales granulated; those on the body have each a central appressed spine directed posteriorly, and forming horizontal rows. Those on the trunk of the caudal and the median portion of the body are more developed and directed in front. The end of the pelvic bone is aculeated.

The dorsal spine is robust, slightly curved truncate and scabrous. The soft dorsal and anal differ but little in shape and size, both being gently arched, slightly tapering and their depth a little less than half the length of their base. Caudal convex, with the angles slightly produced.

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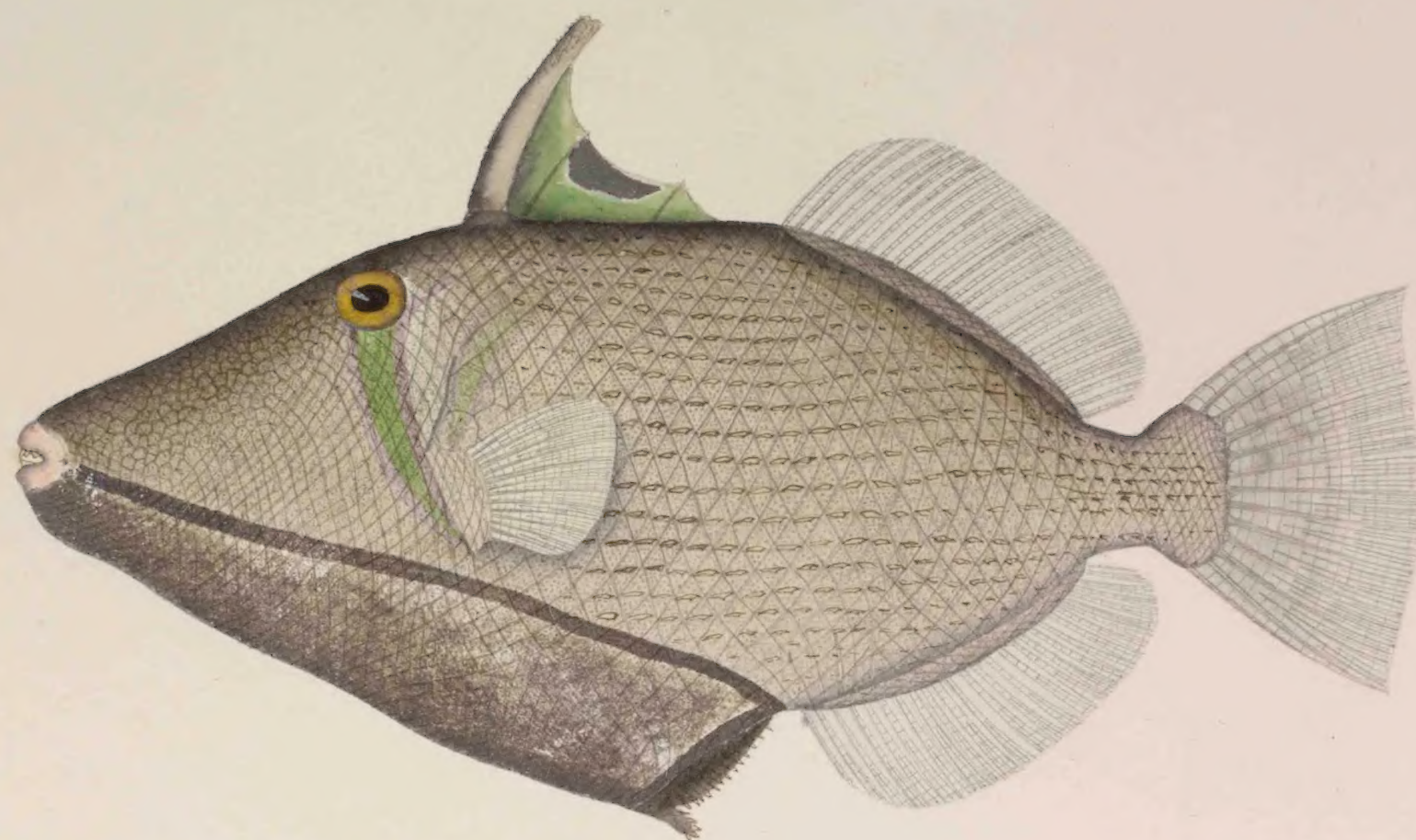
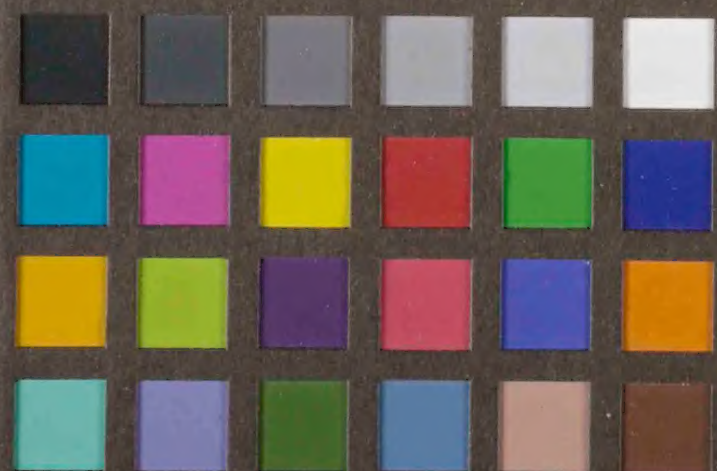
Color light brownish gray, the lower part of the head, throat, and belly creamy white, the two colors separated by a pure white narrow ribbon which extends from the angle of the mouth to the vent, whence it passes forward round the pelvic bone. That part of the pelvic bone and edge of the belly external of the line is deep black. A tapering green band, margined with violet, descends from the eye and ends at the lower base of the pectorals. Lips pale reddish. Girdles cupreous. The first dorsal is variegated with green and white. All the other fins, except the caudal which is shaded with dusky, are colorless.

Length, 6 inches.

Habitat: Society Isls. Sandwich Isls.

A common species at the former location, but rare at the latter, where they attain a larger size, and are called "Humuhumu nuka puua".



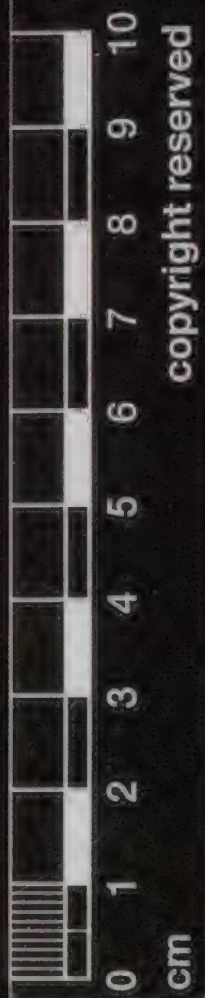
*Balistes pusa*

*? viridescens**Balistes ~~acuminatus~~, Garro.*

D. 12-20; A. 24; P. 12; C. 1, 2, 1, 1.

The general aspect of this species is short and deep. The head counts to be a little less than a third of the total length. The scales are densely papillose, and those on the caudal trunk are persistent with acute papillae, which are disposed in five or six horizontal rows. The upper line of profile in front of the eye is very slightly concave. The eyes are large, oval, their length not quite a fourth as long as the head. The end of the pectoral bone is surmounted with small acute papillae. The snout and anal are as deep, slightly tapering posteriorly, the former passing over a base equaling one-third of the length of the fish, caudal exserted. Sex female and caudal rounded.

Color pale fawn, with dusky shade on the body and fins. The lower part between the snout and the pectoral bone, lower caudal peduncle and the snout, sides capacious, shaded off with bluish and laterally striped with brown. The feet,

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dorsal membrane is pale carmine
and more yellowish spotted with olive green
green. A few blue spots may be seen
on the breast portions of the soft der-
mis, anal and ventral.

Length, 5 inches.

Habitat: Kingman's Is.

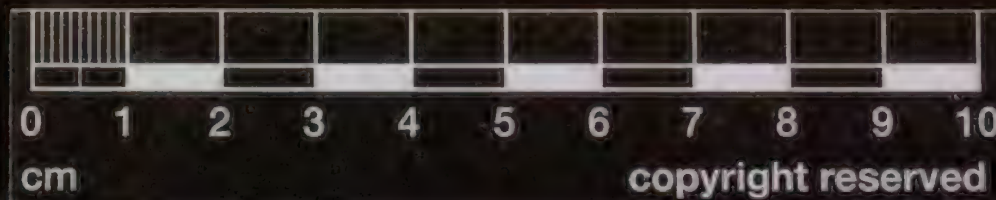


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? *Balistes viridescens*



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fuscus
Balistes elegantissimus, ~~var.~~

D. 12-23; A. 22; P. 14; C. 1, 5, 11.

This elegant *Balistes* has an abbreviated appearance, being of a sub-oval form, and belongs to that group which are distinguished by the absence of ornament on their tail. The scales are rather small, and closely granular. A wide naked space extends from the snout to the cheeks, where may be seen several detached rows of ^{scutes} ~~scales~~, which gradually decrease in size anteriorly. The head is the same length as the base of the soft dorsal, and its upper line of profile, which is slightly arched, rises at an angle of about 45° . The eyes are large, oval, their greatest diameter being about two-ninth the length of the head. They are situated three times their length from the end of the snout. The chin being quite full gives the muzzle an obtuse appearance. The teeth are disposed as follows: $\frac{5-1-1-2}{1-1-1-3}$. They are contiguous, their cusps conical, the two front ones much more prominent than the other two, and the

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0 1 2 3 4 5 6 7 8 9 10
cm



Two spines are present in front and overlap the two beneath, which but lower more developed than the previous. Below base tipped with little prickles.

The first dorsal spine is robust, scabrous in front, smooth and compressed laterally. The second dorsal and anal are very deep anteriorly, convex and rapidly diminishing in depth posteriorly. Their depth as compared to length is nearly three to four. The first two rays rapidly diminish in length beneath and the remaining are rounded off. The large caudal is posteriorly convex, and the corners are considerably prolonged into acute points, which gives it a forked appearance.

Color blue or violaceous blue. The body scales marked each with a round yellow spot, which assumes broken horizontal lines beneath. Maculations and irregular abbreviated stripes of the same color on the orbital region, which form articulations on the top of the head. The scales are golden yellow, dotted with

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blue. The anterior dorsal is straw yellow
very much with steel blue. All the
other fins are rich light green along
their base, which gradually passes
into a pure blue, the latter has
mottling into black or blue black
zone which is externally edged with
a narrow yellow line outside of which
the fins are widely margined with
brassy red. The three zones are like
the body closely spotted with yellow.
A yellow line marks the base of
both dorsal and anal.

Length, 12 inches.

Habitat: Kingman's Island, Society
Isles.

This magnificent fish is called
by the Kingman's Islanders "La-pu-pu"

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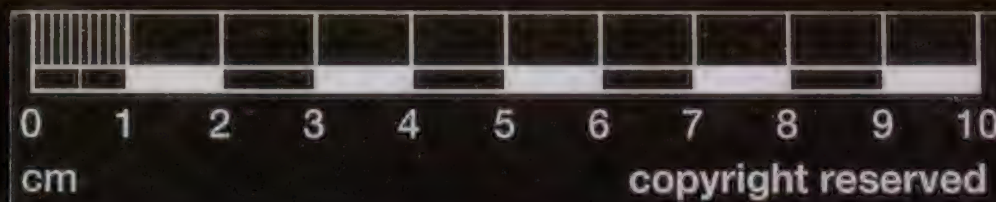
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Taf. 168.
Balistes fuscus

(Kroyer's Rep.)



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Boalistes ^{*flavomarginatus?*} ~~*maximus*~~, ~~*gambelii*~~

U. S. N. 267, Sh. 24, P. 14, L. 1, S. 1, D. 1

The head in this specimen is large, comprising two-sevenths of the entire length, and its upper line of profile from the end of the snout to the dorsal spine is gently arched above, and very slightly concave in advance of the eyes. The eyes are large, circular, their diameter entering seven times in the length of the head and twice in the space between the snout and the base of the dorsal spine. The scales are closely set with minute granules, and those in the caudal trunk are covered with six horizontal rows of stout, appressed, small spines which are directed outward curvily. The pelvic bones are also granulated. The body is more oblong than usual, and the distance between the origin of the dorsal and anal is less than a third of the total length of the fish.

The anterior dorsal spine is granulated, obtuse, slightly curved and inserted immediately above the branch-

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and pinnules. The soft dorsal is nearly as long as the head, the sixth is on the ray the longest, which equals a little more than half the length of its base, and the fin tapers very rapidly posteriorly. The anal is more rounded anteriorly, and deeper according to its length than the fin above. The pectorals are posteriorly rounded off. The caudal when expanded is slightly convex, with its upper and lower angles somewhat produced.

Color grayish fawn, and the smooth interstices of the scales pale gray. Each scale on the body is marked on its anterior angle with a small blackish dot. Cheeks tinged with carmine and dotted with blue. The lower part of the head is light reddish with pale clouds. The upper part of the snout is dark green. Sides with brown radiating lines on a bluish gray or carmine ground. Ventrals grayish steel, and maculated with small irregular olivaceous spots. All the other fins more or less reddish centrally and brown black externally.

Length, 24 inches.

Habitat: Society Isles.

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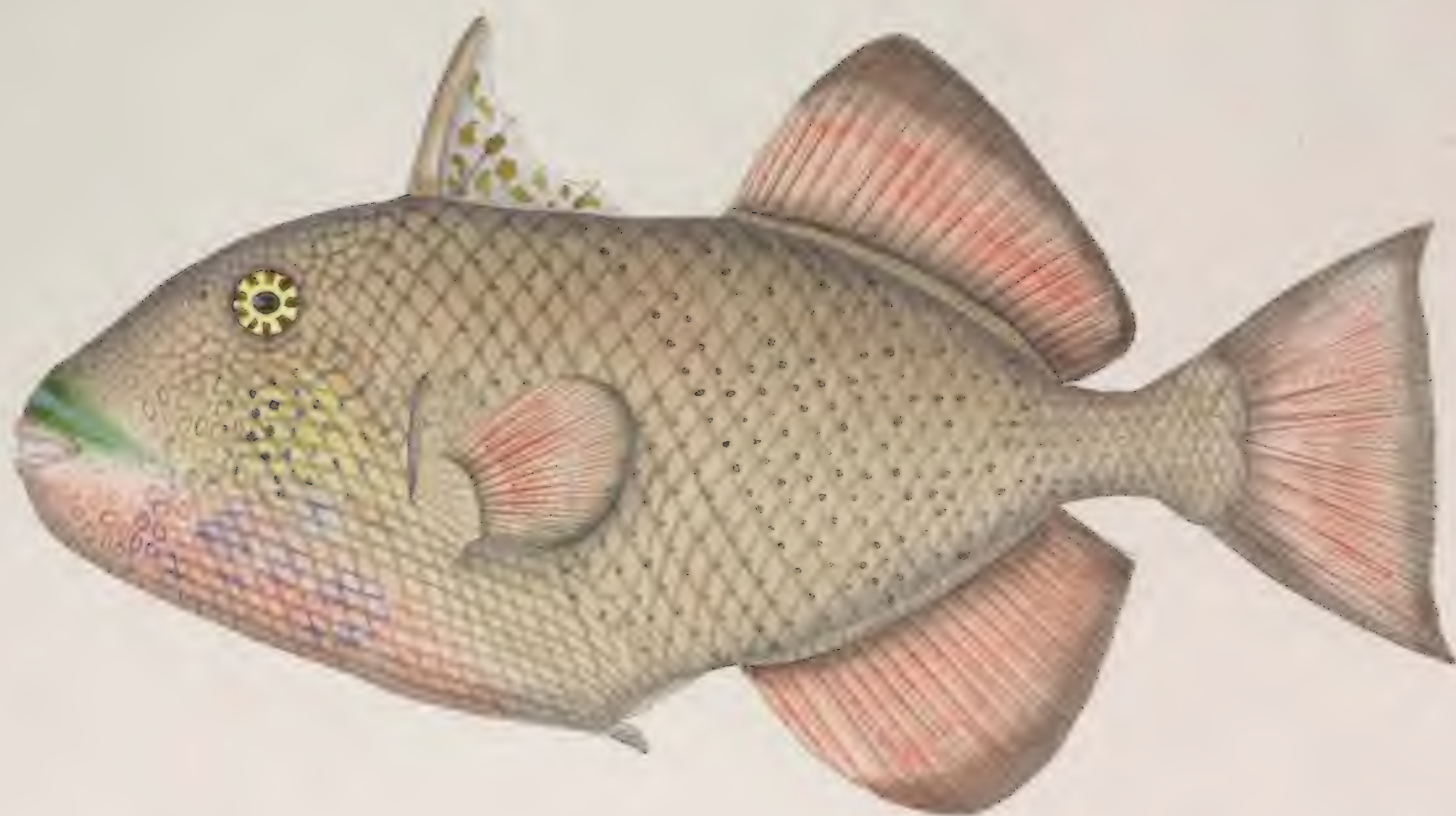


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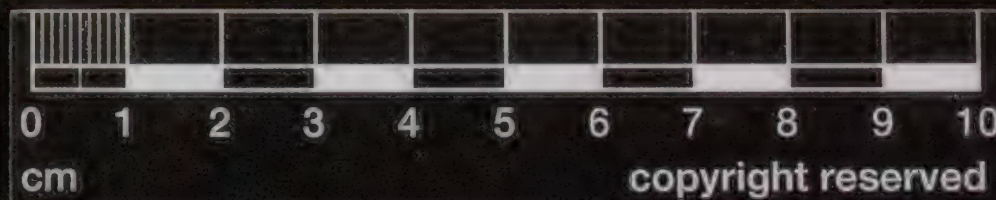


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Balistes flavomarginatus?



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Balistes aculeatus, Linn.

Centracion compressus fasciis nigris, St. Agath.
185.

Balistes rostro sub-obtus., Gronov. *apud*, 185.

Balistes duobus usque ad quinquages., Koch,
2. p. 13, p. 149.

Balistes duobus bicinctus etc., Faber, *Icon.*
Vol. 3, p. 1, pl. 24, fig. 15.

Engraeus cornutus supra dentatus, Klein,
3. p. 15, Pl. 2, p. 10.

Guerpura histrix, Will., *Ichth. app.*, p. 21, pl. 21.

Sauk Hornsch etc. *Reinard*, *poiss.*, Vol. 1, 41,
pl. 25, fig. 159. et Vol. 2,
pl. 25, fig. 159. pl. 24, fig. 159.

Balistes aculeatus, Linn. (*Gmel*) Vol. 3, p. 146.

Balistes aculeatus, Lessau, *Voy. Lap. 1825*,
p. 112, pl. 10, fig. 1.

Balistes aculeatus, *Vol. N. S.*, *Icon. Poiss. The*
apud, p. 98.

Balistes aculeatus, *Bennett et Gray*, *Voy.*
Albion, *Fishes*, p. 107, pl. 10, fig. 2.
Richardson, *Voy. Vancouver*,
p. 24.

D. 1-1-2 etc., *N. 22*, *P. 15*, *C. 1, 4, 5, 3, 1, 1*.

This species has about the same

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shape as *H. rectangularis*, and has likewise three horizontal rows of spines on the tail, which are directed anteriorly; they are disposed in approximately rows of ten in dorsal in the two upper and five or six in the lower row. The dorsal spine is more pointed and its bony median bone is more developed than in the latter species. The second dorsal and anal are not quite so deep, the caudal less rounded in its posterior margin and the pectorals are also more rounded.

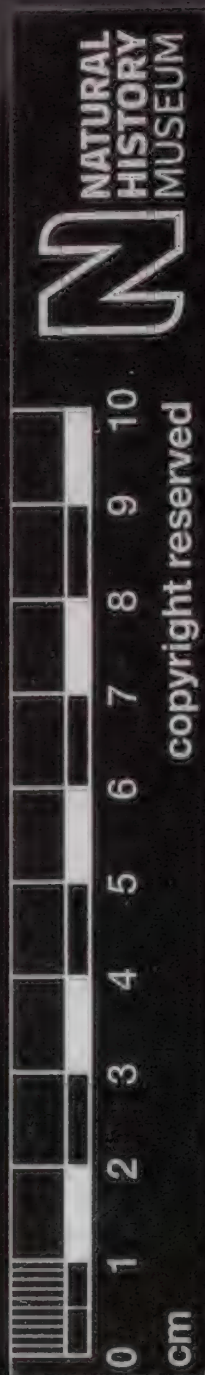
The color is somewhat variable but the peculiar markings are constant. The upper half of the head is brownish, or fulvous, sometimes olivaceous-brown, becoming paler beneath. The lower portion of the head, throat and belly, cream color, which passes into greenish white on the posterior half of the body, a blue band passes over the upper jaw, and an orange yellow one encircles the snout and extends backward as far as the lower base of the pectorals. The dorsal region and caudal trunk are fulvous or brownish fawn, the latter marked by a horizontal black

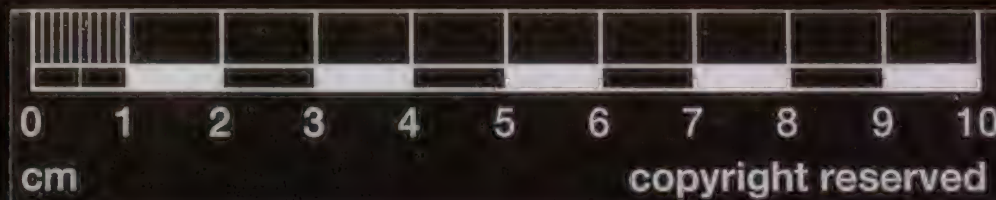
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figures it as a new species, yet without a doubt the resemblance of *Linnaea*.
This very formula is D. 5-25, P. 18, A. 20, 1/2.
This figure is tolerably good, but like
most of the plates of fishes in the French
Voyage are faulty in coloring. The fi-
gures on the tail are inaccurate, as they
are disposed in four rows in a brown bar,
while all the specimens collected by
myself had but three rows, in a black
band. This figure represents the upper
half of the body dark reddish brown
and light carnation beneath. The
upper half of the head green. The spiny
dorsal extends too far back, and the
caudal is simply emarginate.

The figure in the Zoology, Voyage
Belousoff, from a drawing by the French
eye, which differs somewhat in detail
of color, yet as a very good representa-
tion of the species, especially in the
shape of the fins and arrangement of the
tail.



*Balistes aculeatus*

Balistes ^{*semicinctus*} No 458

458

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S. 3-25; A. 23; P. 13; C. 1-5-5-1.

Color of the upper half of the body light olive brown, the upper half of the head of a slate color, the lower half of the fish is bluish white. Lips flesh color, a chrome yellow band extend backward and downward from the hinder angle of the mouth to the lower base of the P., the band passing over the upper jaw. Three dove colored lines descend from the eye, enclosing two black ones and terminating just in front of the P. The lines continued across the interocular space. Vider brown. A large diffuse black spot over the abdomen. The hinder termination of the dorsal fin is marked by a small bluish green spot, enclosing a black line. A large black spot on caudal trunk, partly margined anteriorly with green. Base of the caudal chrome yellow, the remainder by a semicircular blackish brown band, outside of which the fin is colorless. P. colorless, base margined yellow and black.

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cm



Dorsal spine olive brown. The membrane
purplish, 2 D. and A. coloration.

A rare species measuring 8 inches
in total length, of which the head comprises
a third. For outline, body, shape and
relative proportion of fins see drawing
which is very correct except the scale-
like compartments which are too large.

Hab. Society Isls.



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*Balistes verrucosus*

Balistes rectangulus, Bloch, Ichth.*Balistes rectangulus*, Bloch, Ichth. 450*Balistes scarpa*, Lacépède, Poiss., t. 1.*Balistes mendocinella*, J. & G. S. S. 1859, Proc.
Acad. Nat. Sci. Phila., vol. 1, p. 46,
fig. 2.*Balistes erythrophthalmus*, Lesauv., Voy.
Voyage, p. 123, pl.
10, fig. 8.*Balistes rectangulus*, Richardson, Voy.
Amur, p. 11, fig. 1.

mouth straight. The eyes are of a round shape, their greatest diameter being about one-fifth the length of the head, and are situated at a point just over their length obliquely forward and downward from the base of the dorsal spine. The scales are granulated, and there exists three horizontal rows of spines posteriorly, all being directed in front. The end of the pelvic branch rough with white papillae, and the lower lobe posterior presents several spiny rays. Dorsal fin has alternate rays.

The dorsal spine is robust, slightly curved, obtuse and scabrous. It has



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Balistes argenteatus, Valenciennes, etc.

D. = 23; A. = 20; P. = 12; V. = 5; S. = 1.

This *Balistes* enters that division of the genus, characterized by having three rows of spines on the tail. The head, which is of a pyramidal form, constitutes just one-third of the total length, and its upper line of profile from the snout to the interocular space is nearly straight. The eyes are of an oval shape, their greatest diameter being about one-fifth the length of the head, and are situated at a point just over their length obliquely forward and downward from the base of the dorsal spine. The scales are granulating, and there exist three horizontal rows of spines posteriorly, all being directed in front. The end of the pelvic bone is rough with acute papillae, and the scapular posterior presents several spines, arranged in two alternate rows.

The dorsal spine is robust, slightly curved, obtuse and scabrous. The anal

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mean bone is small and conical.
 The dorsal, anal and vent are more
 or less similar, both gently arching, the
 latter the shorter, and the former is
 twice as long as high. The caudal fin
 when expanded presents a rounded
 posterior margin, with the angles
 produced in little triangular points.
 The pectorals are about the same length
 as the dorsal spine, and rounded off
 at their angles.

The color of the living fish is a
 light grayish fawn along the upper
 part, and whitish or bluish white on
 the flanks. A broad black band ex-
 tends from the interocular space, obli-
 quely downward and backward to the
 base of the anal fin. The head, which
 increases in width in its descent, is
 margined blue above the pectorals. A
 short buff yellow stripe, margined with
 light blue falls from the anterior limit
 of the orbit. A light blue ribbon passes
 over the snout. Caudal trunk black,
 which color is margined with green,
 and is prolonged anteriorly into an
 acute chevron. A gamboge yellow
 ribbon starts from the hinder base

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of the dorsal, or second one from the
same portion of the anal, both curves
regular as they pass anteriorly, each
ending just behind the pectorals and
forming an acute angle, which corresponds
to the green marginal chromophore. The
black subocular space is transversely
limited with green. Vides otherwise.
The first dorsal blackish, and all the
other fins colorless, with dusky rays.
A light red band marks the base of
the pectorals.

Length, 8 inches.

Habitat: Society Is. Kingman Is.
Palmyra Is. New Guinea.

Gray and Gaimard's figure is some-
what faulty in outline and color.

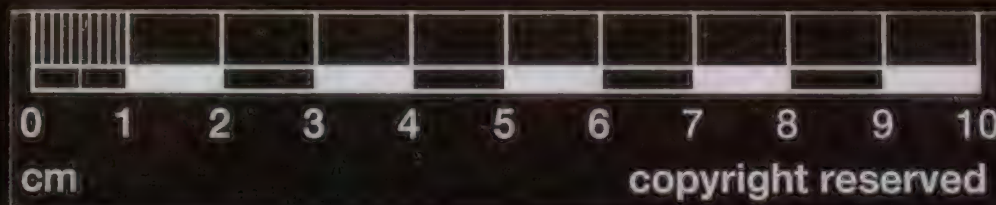
Lesson's figure is much more accu-
rate, both in shape and color, except
the body being darker, and not exhib-
iting the ornamentation of the tail.

Gray and Gaimard's ray formula is, D. 27
25; P. 13; A. 21; C. 12.

Lesson gives. D. 2-24; P. 13; A. 20; C. 12.

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*Balistes rectangulus*

*undulatus**Balistes lineatus*, Bloch. Ichth.*Balistes lineatus*, Bloch, Ichth., p. 400, t. 27.

Canal, 212.

Balistes lineatus, Lutz et Salm. Voy.

Voy. circ. 7, p. 20, pl. 2.

fig. 1.

Balistes lineatus, Lutz et Salm.

Voy. Italicum, Planch.

p. 23, pl. 21, fig. 1.

Balistes lineatus, Richardson, Rep. Part.

Vol. 1, 1846, p. 112.

D. 1-26; A. 24; P. 12; L. 1, 3, 1/2 1.

This species belongs to that group of *Balistes* having two rows of spines on the back. These spines, which vary in form from three to five in each horizontal row, are unusually stout and curved outwards. The scales are granulated. The head, which is less than a third of the fish, has the upper and lower rows of preopercles nearly similar, and very slightly convex. The eyes are small, their length not being six and a half times in the length of the head. The pectoral bone is slightly spiny, also a few small spinules may be seen on the snout.

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The dorsal spine is robust, obtuse, very slightly curved, and uppermost fin. The anal fin is large, approximating the second dorsal, and the third ray is very small, and about midway between the commencement of the two fins. The second dorsal and anal are rather long, slightly curved and of nearly similar shape. The caudal is convex posteriorly and the angles are slightly produced. The pectorals are rounded off.

Color slate dark green, and generally with a violaceous or blue tinge along the dorsal region, and sometimes with a greenish brown tinge on the cheeks. Some individuals are deep blue black, the throat black and the upper part of the head dark brown. The body is always ornamented with narrow irregular red or yellowish red lines which curve obliquely forward and backward from the dorsal region, where they are more or less bifurcate. Several transverse yellow lines cross the entire ventral space. Large subventral oblong black spots on the caudal base. Dorsal alternate, black, blue and sometimes



red lines encircles the snout and
continued posteriorly and obliquely down
as far as the breast. Under light
yellow, with dusky clouds. Ventrals light
yellow or greenish yellow rays, sometimes
the membrane is tinged with purple
and the rays orange. Spiny dorsal mem-
brane brownish yellow with a marginal
black spot. All the other fins are
unmarked, with orange edges, or slightly
tinged with yellow.

Length, 10 inches.

Th. bi. nat. Ridgway's Cat. Fishes
Vol. Panam. Soc. Society Islands.

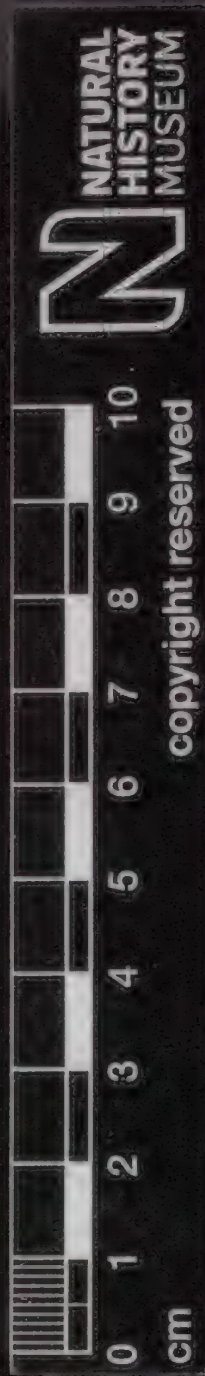
This species is common at all the
above localities, and may be easily
determined by the curved oblique
lines, and tricolored bridle.

Roy and Grunard figure is without
a doubt this species, but it is so very
inaccurate that even Linnaeus referred it
with a doubt to the lineatus group.
Comparing the French plates of fishes
with the specimens, they have observed
it to be delicate, and discovering so many
both faintly, in outline and color that
I at once referred these to *Lamprose* to
this species.

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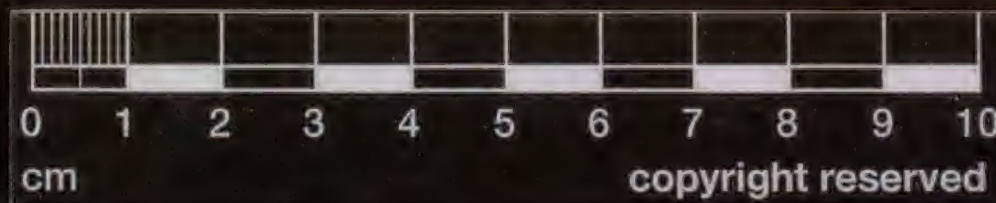


In the Zoology of the Voyage of the
 Albatross, I find a fish described un-
 der the name of *Halibut sargassinensis*,
 from the Society Islands, and described
 from a drawing made by Mr. Beechey.
 It is evidently taken from a mutilated
 specimen, and characterized by ~~the~~
 having some of the lines interrupted,
 a character of no value, as we often
 find the true *linceus* with the lines
 interrupted.





Balistes undulatus



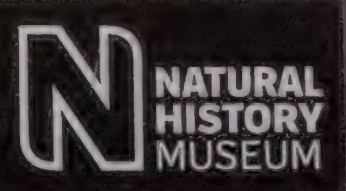
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Myxiphanes
Parma

452



Balistes undulatus



*Balistes erythrædon*Balistes No 448

D. 35-38; A. 30; P. 13; V. 1, 5, 3, 1

This *Balistes* belongs to the same group as *B. sinensis*, or those species characterized by several rows of small spines. The upper line of profile from the end of the snout to the dorsal spine, rises at an angle of 30° in a nearly straight course, and the space between the two dorsals has also a slight ascent, and at the commencement of the second fin descends to the tail at an angle of about 30° . From the snout to the end of the pelvic bone the outline is slightly arched, and the base of the anal fin is less pro-cipitate than the fin above. The depth of the body at the origin of the soft dorsal, equals the base of the latter fin. The head enters about three times in the space between the end of the snout and the hinder termination of the soft dorsal fin. The rounded chin is prominent and projects in advance of the small oblique mouth. The upper maxillary teeth are transient in front and the two canines are very long and projecting anteriorly. The lower maxillary teeth are larger than those

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cm



above and are bicuspidate. The eyes are of moderate size, circular in shape, their diameter entering about six times in the length of the head, and four times between their own orbit and the angle of the mouth. The scales are separated by smooth spaces, though under the lens they appear rough. On the body they are rather large, forming regular rhombs, deeper than long, similar but smaller on the cheeks and more or less irregular elsewhere. They are covered with minute granules, and instead of spines we observe eight horizontal rows of little tubercles which are disposed one on the anterior angle of each scale in the eight series, which occupy the space between the soft dorsal and anal fin, four of which are continued on the caudal trunk.

The dorsal ~~fin~~ spine is stout, obtuse, scabrous in front with minute spinules. Its point of insertion is just behind that of the pectorals and is separated from the soft dorsal by a space equal to half the length of the latter fin. Its posterior membrane is small and deeply concave. The soft dorsal and anal fins are rather long, the



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perme the longer and deeper, their anterior
portions slightly prolonged and both tapering
posteriorly. The pectorals are small, and
obliquely rounded. The caudal trunk is
small and the upper and lower rays
are drawn out into two very long
slender forks, the lower the longer.
Color of the living fish dark
violaceous blue. Head more or less tinged
with brownish bronze. Ventrals light green.
Dorsal reddish amber. First dorsal
membrane violet, all the other fins
the same color as the body, the caudal
with a posterior white border, and the
soft dorsal and anal with a light
green tinge along their basal portions.

Length 12 to 13 inches.

Hab. Society Isls.

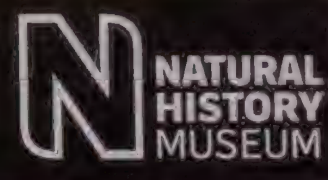
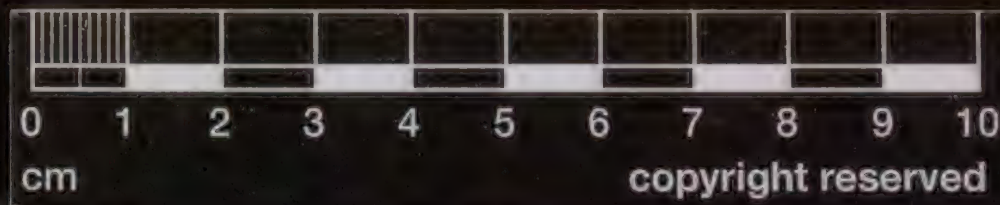
A rare species. The dead
fish ~~is~~ ^{is} nearly black.

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Balistes erythron



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Monocanthus ^{parvulus} ~~lugubris, garrett~~

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Plate

D. 1/36; A. 31; P. 13; C. 1, 5, 5, 1.

This Monocanthus is very much compressed. The head constitutes one-fourth of the total length. The eye is large, circular, its diameter one-fourth of the length of the head, and inserted less than the depth of its orbit beneath the dorsal spine. The skin is velvet-like. The snout is prominent, and the upper line of the head is merely straight. The space between the two dorsals is slightly convex. The pelvic bone is spiny.

The dorsal spine is long, being nearly the length of the head, slender, slightly curved, scabrous and pointed. The second dorsal takes its origin a trifle posterior to the middle of the total length of the fish. It attains its greatest altitude at the fifth ray, whence it tapers rapidly posteriorly. The anal is the deepest at the fourth ray. The caudal, including its trunk, is as compared to the entire length two to eight.

The ground color is blackish brown with a ochraceous tinge along the abdomen. Sides olive brown. Pectorals colorless. Dorsal and anal have a slight amber tinge, with amber yellow rays. The caudal is orange posteriorly, and its rays are blackish brown.

Length, 5 inches.

Habitat. Society Is. Kingsmill Isl.

Remarks. At the former location it is called Ori. The single specimen collected at the latter location was dusky grey, and the dorsal spine shorter. Its dorsal rays were 34 and the anal 30.

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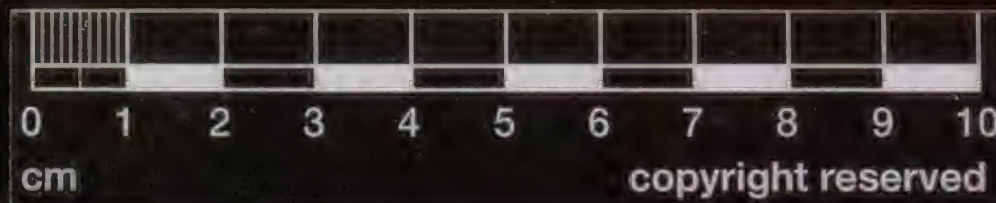


Syngnathus pardalis

Monacanthus pardalis

Monacanthus pardalis, var.

(*Epallus* / *Epallus*)



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Monocanthus ^{cretae} ~~Sandwichensis~~, L. & G.

Pelister Sandwichensis L. & G. Zool. Voy.
Grecinet, p. 214

It is with some hesitation that I refer this species to L. & G.'s *P. Sandwichensis*. Their description since compared with mine is so very brief as to be useless. Their ray formula reads D. 2-35; A. 30; C. 12; P. 13. During several years collecting at the Sandwich group, I discovered no other large *Monocanthus*, so I suppose this is the species indicated by those Naturalists.

D. 2-36; A. 32; P. 15; C. 1-5; 5/1.

The specimen from which our drawing was made measured 9 1/2 inches in total length, of which the head comprised nearly a third. Its upper line of profile from the snout to the dorsal spine rises at an angle of nearly 30° and is very slightly concave. The pelvic bone is very long, and the dorsal is proportionally large. The side of the caudal trunk is armed with 4 robust conical spines which curve anteriorly. The eyes are situated just beneath the dorsal spine, which latter is long and slightly curved. Both soft dorsal and anal are rounded anteriorly only.

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2

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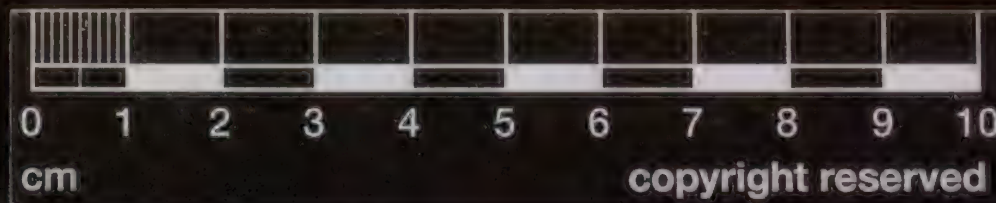
0 1 2 3 4 5 6 7 8 9 10 cm

the latter deeper than the former and
tapers much more rapidly behind.
The caudal is arched on its hinder mar-
gin, and the pectorals are obliquely
rounded.

Color brown, or brownish gray, pale
beneath, with or without ^{yellow} ~~up~~ ^{bridle}
extending backward from the lips.
The eyes are pale yellow, the lips red-
dish and the caudal brown. All
the other fins with yellow rays.

Length 10 inches.

Hab. Sandwich Isls.

*Monacanthus tomentosus**tomentosus**Monacanthus tomentosus*

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Monacanthus ^{honeyis} quadrispinosus, garrett.

Male

D. 12/36; A. 29; P. 14; C. 1, 6, 6, 1.

The head constitutes one-third of the fish, caudal fin excluded. The ^{snout} is rounded, the chin prominent, and the upper line of profile is slightly concave. The large eye is circular, and its diameter equals about four and a half times in the length of the head. The skin is asperous, like the file on velvet. The pelvic bone is spiny. The trunk of the tail is armed with four stout spines, which are disposed in a quadrangle and curved anteriorly.

The dorsal spine is long, slender, nearly straight, scabrous in front and its hinder basal half spiny. The second dorsal is nearly as long as the head, its upper line arched, and the eighth or ninth ray tallest.

Color somewhat variable; but generally of an oliveaceous brown, dusky green along the lower parts, or mottled with the same. Some are immaculate, others are sprinkled with small round whitish spots and black dots, intermixed. One specimen observed was pale greyish, mottled and clouded with brownish and maculated with small oval pale spots. Irides orange, clouded with brown. Dorsal, anal and pectorals have orange rays and colorless membranes. The caudal is olive brown, sometimes mottled with orange. The lateral spines are orange.

Length, 8 to 10 inches.

Habitat.—Society Isls.

Remarks.—The lateral spines are only well developed in the adult. The upper line of the head is more concave than in M. lugubris, M. lobis, and the snout more obtusely rounded.

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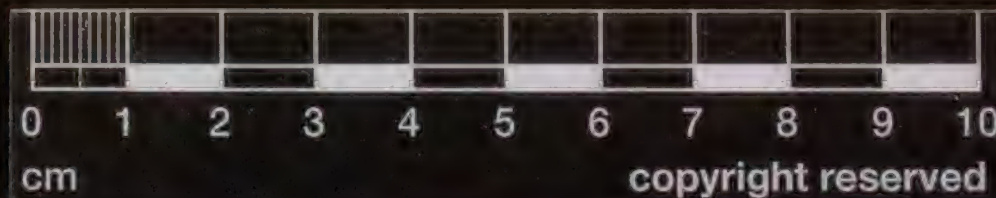
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456



Monacanthus tomentosus

*Monacanthus
albomaculatus*



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scopas
Honocentrus armatus, Garratt

D. 1-29; A. 25; P. 13; V. 1, 5, 5, 1.

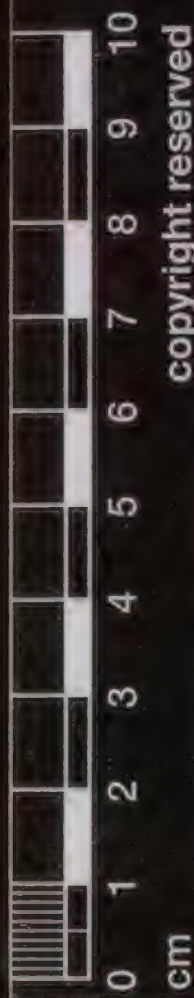
This remarkable species has a comparatively short head which comprises no more than a fourth of the entire length of the fish, and its upper line of profile is quite precipitate, and very slightly concave. The eyes are moderately large, circular, their diameter being one-fourth the length of the head, and inserted the diameter of its own orbit beneath the dorsal spine. Teeth 4. The pelvic bone is length with stout spines. The caudal trunk is very deep, being one-seventh the total length of the fish. The skin is very rough, particularly posteriorly. The middle of the flanks are vertically undulates. On the median longitudinal line of the body beneath the middle of the soft dorsal fin is a cluster of stout, sub-clavate spines, six or seven in number all attached to a common bone.

The dorsal spine is stout, long, very slightly curved, scabrous, pointed, and when laid back nearly reaches the second dorsal. Its minute membrane is mostly sunk into the basal groove. The second dorsal and anal are rather low, gently arched, and the former extends over a base one-third the length of the fish.

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Color brownish-olive passing
into black along the dorsal region
and posteriorly. Vides light olivaceous,
benial black. All the other fins
are nearly colorless, except their
rays which are amber yellow.

Length 7 1/2 inches.

Hab. — Society Is.

A very rare species of
which we have seen but a single
example.



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Monacanthus tomentosus

scopas



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Monocanthus longirostris
No 323

438

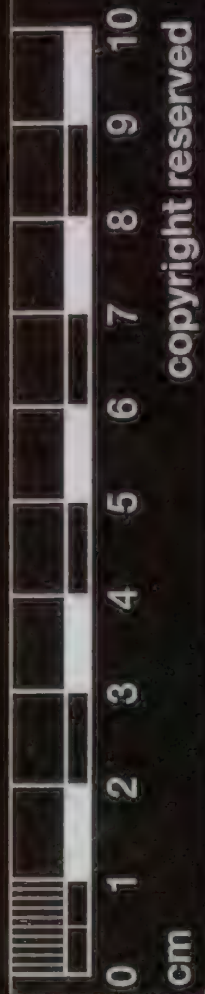
D. 1-32; A. 20; P. 15; C. 1, 5, 5, 1.

This beautiful little species is of an elongate oblong form, with the dorsal outline but little arched, and concave between the two dorsals. The trunk of the caudal in depth equals half that of the body at the origin of the second dorsal fin. The integuments are asperous. The depth of the body at the origin of the anal fin equals two-sevenths of the entire length of the fish. The prominent pelvic bone is united to the abdomen by a prickly decalup. The head is long, comprising about a third of the fish, and its upper and lower outlines are slightly concave. The snout is long and tapering. The eyes are circular, their diameter entering five times in the length of the head.

The dorsal spine is long, inserted over the eyes, and rough with minute prickles. The second dorsal is long, rather low, and in length equals one-third the total length of the fish. The anal fin is shorter but similar in shape to the fin above. The caudal is deeper than long, truncate and convex on its hinder margin.

Color light bluish green, spotted with orange. Lips and sides orange, the latter rayed with blue. Caudal tinged with yellow, and ornamented with a black spot.

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Length

Habitat. Samoa Isl.



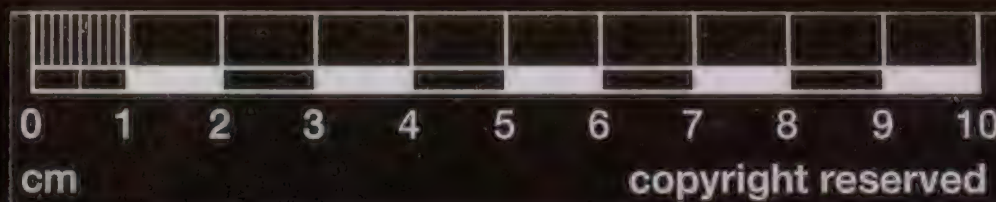
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Thalassoma longirostris

Longirostris

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67450
Monocanthus spilosoma, Bennett.

Plate

Monocanthus spilosoma, Bennett, Zool. Mag.
Glossom, Fishes, p. 70.
Pl. 22. fig. 1.

D. 1/34; A. 55; P. 15; C. 1, 5, 5, 1.

The integuments are covered with short, rigid hair-like asperities, which are the most developed towards the tail and along the breast. The profile of the head from the snout to the dorsal spine is slightly concave, as is also the space posterior to the spine. The eye is large, circular, its diameter equalling one-third the length of the head, which latter is, as compared to the entire length of the fish, about two to seven. The prominent pelvic bone is spiny.

The dorsal spine is large, scabrous and armed with a lateral row of recurved spinules. The second dorsal takes its origin at a point corresponding to the middle of the entire length of the fish. The fourth or fifth ray is the longest. The caudal trunk is deep, and the fin when fully expanded presents the half circle.

Color yellow, more or less clouded with brown, and the body is closely maculated with small rounded diffuse blackish or brownish spots. The breast and lower line of the head is cinerous. The upper portion of the head is more or less brown, and its sides obliquely striped with the same color, but of a deeper shade. A fine rich blue line traverses the lower line of the body, from the pelvic bone to the anal base, where it is more or less broken into dots. Irides golden yellow, dotted with brown. The membrane of the dorsal spine is amber color, and spotted with blue. The pectorals are colorless. The soft dorsal and anal are alternately lineated longitudinally with straw yellow and bluish steel. The caudal fin is rich orange red which gradually passes into

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range yellow posteriorly; its basal portion is dotted with black and the outer part is marked with a broad black intramarginal band.

Length, 5 inches.

Habitat: Sandwich Is.

Remarks. At certain periods this beautiful little species swarms about the rocky coasts of the above mentioned islands, and are captured in immense quantities with scoop-nets by torch-light. I have seen them floating dead in great numbers. They are called by the natives U-wi-wi. Stragglers are seen the year round but few in number.



Monocanthus rectispinus, Garro

D. 11-33; A. 32; P. 13; V. 1, 5, 5, 1.

The skin is slightly aspersed like the pile on velvet. The head, excluding the caudal fin is one-third of the whole fish. The large eye is circular, and its diameter enters nearly three times in the length of the side of the head. The upper line of the head is slightly convex. The pelvic bone is very prominent and radiately spined.

The dorsal spine is long, slender, straight, and placed immediately above the base of the pectorals. It is armed with a lateral row of spinules, which are curved downwards and its anterior surface is scabrous. Its height equals the distance from the eye to the end of the snout. The second dorsal and anal are rounded off anteriorly, the former commencing at the middle of the fish, and attains its greatest height at the sixth ray. The pectorals are short, their length only equalling the diameter of the eye. The trunk of the caudal fin is rather slender.



Color light bluish steel and
olivaceous brown above. Every where
except the fins maculated with
olivaceous brown, the spots being
irregular shaped and fading
away along the lower parts. Sides
yellow. Fins nearly colorless.

Length 4 inches.

Hab. - Sandwich Is.



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288

400

Monacanthus sp.



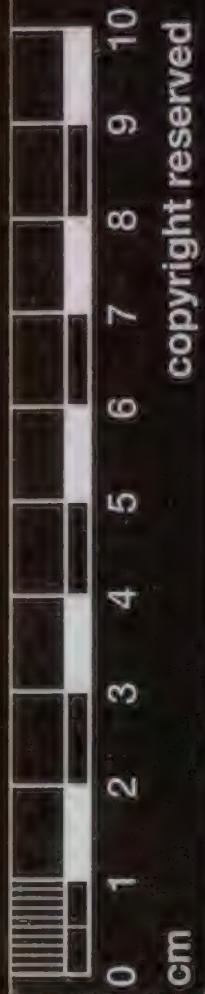
459

Monacanthus opulosoma

opulosoma

289

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HISTORY
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Monacanthus tomentosus
Muteres pareva, Lesson.

392

461

Plate

Muteres pareva, Lesson, Voy. Du Coquille, p. 166.

D. 1/49; A. 52; P. 14; C. 1, 5, 5, 1.

The general outline is elongate oblong, strongly compressed. The skin is velvety. The head, measuring to the gill fissures, in a specimen two feet and one inch long, is five and three-fourth inches in length. The snout is considerably produced, and the upper line as far as the ^{inter}-orbital space is concave. The eye is nearly circular, its greatest diameter about one-seventh the length of the head, and inserted one diameter beneath the single dorsal spine. The latter spine is minute, and separated from the second dorsal by an empty space which nearly equals the second dorsal base. The second dorsal and anal fins are low, rounded off anteriorly, and the latter which is the longer, also, approaches nearer the base of the caudal. The small pectorals are rounded. The caudal fin is very large, being one-fourth of the entire fish, its posterior margin strongly arched and the rays project beyond their membranes.

Color of the living fish light purple brown, changing when dead to a light greyish-brown. Sides of the body with abbreviated longitudinal lines and crescent shaped spots, violet, and the head is irregularly lineated longitudinally with the same color. Scattering small brown spots on head and body. Irides silvery yellow; cornea blue black. Fins transparent, nearly colorless, all except the caudal have pale amber rays.

Length, 2 1/2 feet.

Habitat. Society Isls.

Vernacular name, Pareva.

Remark. Not common. Lesson obtained his specimen at Tahiti.

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cm
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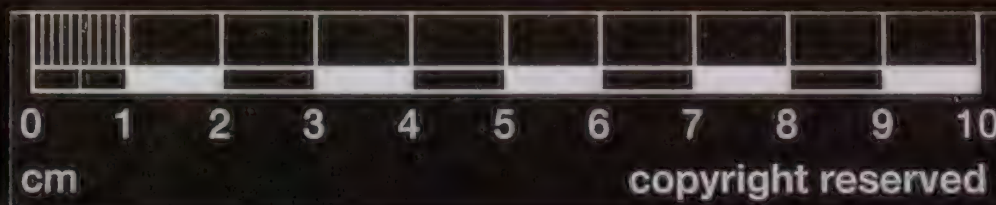
392

461



Monacanthus scriptus

scriptus



N NATURAL
HISTORY
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Copacien ^{siboe} No 305

D. 1/17, A. 1/16, P. 1/17, V. 1/16, 1.

The dorsal region is light brown, closely maculated with small round white spots. Interorbital space orange. Sides violet steel spotted with orange yellow, the spots round or oblong and margined with blackish. The belly is the same color as the sides, paler centrally, which latter part is immaculate. Head immaculate purple steel. Sides orange. The caudal peduncle is violet steel, spotted and banded with orange yellow, the upper portion brown, dotted with white. The basal half of the caudal bridge blue or dark violet, dotted with orange yellow. The outer half and the other fins nearly colorless.

This species is quite common at the Sandwich, Society and Kingsmill Isles, and attains a length of from 4 to 5 inches.

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2



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cm



cubicus
Ostracion No. 306

D. 17; A. 15; P. 18; V. 1, 5, 1.

The body is oblong, quadrangular when viewed in front, and the back which is transversely convex is gently arched in profile. The sides are concave. The head is preopisthotely concave in front and the snout is somewhat laterally compressed, the lips thick, and the teeth which are in a single range are even, close set and brachyodont. Interocular space concave.

Color back sides and caudal trunk fawn yellow with darker clouds and each scaly plate with a pale blue dark margined round spot. Belly whitish with olive shades or bluish white with scattered white spots. The head is brownish purple, dotted with black. Irides whitish with brown clouds. Fins pale fawn yellow.

Length 8 to 12 inches.

Hab. - Kingsmill, Society Is.

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~~*Subitellus fideus*~~ 464

D. 9, A. 9, P. 8, C. 1-2, 1. 307

Ostracion punctatus

This species has a more pronounced snout than either ³⁰⁶*leucurus* or ³⁰⁵*frons*, and never attains so large a size. The back is more arched than the latter species, and the head is not so full in front of the eyes. The head is also more compressed and the interocular space presents a deeper concavity.

The head comprises about a fourth of the fish, snout excluded. The proportions of the body varies, some are more slender than others. Color blackish brown and dots with whitish yellow. The dots are of irregular shape, being smaller and more crowded on the back and caudal trunk. In some instances the belly is paler and the dots white or bluish white. Girdles silvery, more or less clouded with deep brown. Dorsal blackish brown, gradually becoming colorless posteriorly, and more or less dotted like the body. All the other fins transparent and colorless.

Length 4 in. Habitat: Sandwich and Society Is. Larvae. At the former location this species is called *Alou* and at the latter *Ho moa*. Its fisher suggested the specific name.

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Ostracion sebae

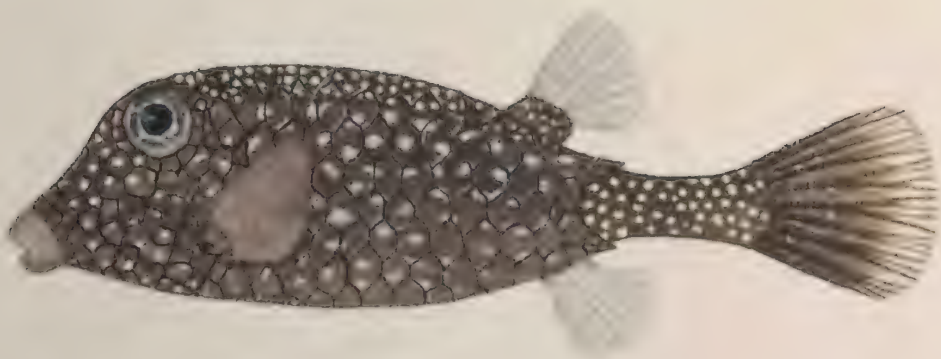
sebae



Ostrac. cubicus

306

Cubicus



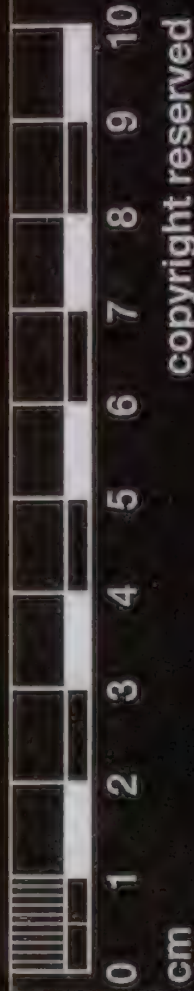
Ostracion punctatus

punctatus

307

464

NATURAL HISTORY MUSEUM



Ostracion ^{*forficatus*} ~~*testus*~~ 341 7

We have a single specimen of before us of this very rare and singular fish, which has been preserved in alcohol, and now enriches the collection of Mr. W. H. Pease. This gentleman informs us that it was taken on the coast of Cuba, and is the only specimen that has come under his observation.

The natural colors ~~have~~ probably been destroyed by the alcohol. It is

upper and lateral planes concave, and the lower convex. The superior lateral ridge, which extends from the eye to the trunk of the tail, has two small tubercles anteriorly, and has an elevated crest-like tubercle posteriorly. Just in advance of the dorsal fin there is a small depressed sharp tubercle. The breadth of the back is one-third less than that of the belly. The eyes ^{are} large, nearly circular, and placed high in the head; their diameter is less than ~~than~~ half that of the interorbital space. From the upper anterior angles of the head, there arises two, long, spines, ^{directed} obliquely upwards and forwards; they are longitudinally striated, tapering to a blunt point, and their length is a triple less than the diameter of the eye. Two similar spines arise from the hinder portion of the lower surface

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2

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0 1 2 3 4 5 6 7 8 9 10
cm



new of a nearly uniform brown, much paler with a yellowish tinge along the ventral region. ~~region~~. Fins uncolored.

The form is oblong, sub-quadrangular, gradually ^{tapering} behind, and the dorsal and ventral outlines are slightly arched. The front of the head is vertically concave, and deeper than long, which latter is one third of the length of the fish, measuring from the snout to the end of the tail. The outline of the body when viewed in front is quadrangular, with the upper and lateral planes concave, and the lower convex. The superior lateral ridge, which extends from the eye to the trunk of the tail, has two small tubercles anteriorly, and has an elevated crest-like tubercle posteriorly. Just in advance of the dorsal fin there is a small depressed sharp tubercle. The breadth of the back is one-third less than that of the belly. The eyes ^{are} ~~are~~ large, nearly circular, and placed high in the head; their diameter is less than ~~than~~ half that of the interorbital space. From the upper anterior angles of the head, there arises two long spines, ^{directed} obliquely upwards and forwards; they are longitudinally striated, tapering to a blunt point, and their length is a triple less than two diameters of the eye. Two similar spines arise from the hinder portion of the lower surface

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MUSEUM



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cm



of the body, and are directed backwards, reaching as far as the tip of the caudal fin. There are eight acute, conical teeth in the lower jaw; those in the upper have the front ones gone so that their exact number cannot be determined.

The little multangular plates on the back and sides, have raised lines radiating in a stellate manner from their centres, which gives the whole surface a beautiful reticulated appearance. The ventral plates are studded each with a ^{single} central, and a circular range of small hemispherical papillae.

The dorsal fin is inserted quite near to the hinder termination of the body. The anterior rays are the tallest, and the upper margin of the fin is convex. All the rays of this and the other fins are unbranched.

The anal fin is quite similar to the dorsal but placed further back.

The pectorals are about the same height as the dorsal fin.

The caudal fin is rounded behind.

Length. $2\frac{1}{4}$ inches.

Habitat: Lake.

Native name Moir.

Remarks. There is a closely allied species found at the above location, from which this differs in several important characters, which is unnecessary to point out.

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cm



C. stracion sp 342

466

D. 10; A. 9; b. 9; P. 10.

This minute species may possibly be immature. It is uniform pale silvery gray. Sides silvery; cornea blue-black. Fins colorless.

Form sub-quadrangular in profile, sides deeply concave, back slightly convex and furnished with two contiguous conical tubercular points on posterior half. The belly is rounded centrally, the angles above and beneath very prominent. Scales with depressed tubercles, which become conical on the prominent angles. Scales also marked by elevated striae. Two deep concave emarginations in the upper lateral angles. Eye large, vul.

Length 1 inch.

Hab. Society Isls.

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Astracion sp. 343

D. 9; A. 9; P. 10; 64, 8, 1.

This species is olivaceous-yellow on the back and sides, the belly straw yellow, the former parts more or less with olive reticulations and irregularly dotted with violaceous-blue. Sides olive with a golden ring. The caudal and trunk maculated with small olive spots and dotted with violet blue. All the other fins colorless.

The anterior spines are divergent, rather slender, long and nearly straight. The posterior spines are of the same size as the anterior ones, slightly curved, and all beautifully grooved. The scales have radiating elevated lines and numerous papillae. A small tubercle may be seen just upward and backward from the orbit, and a large bump about midway between the eye and hinder tip of the body. A smaller lump just in advance of the dorsal fin.

Length see drawing

Hab. Society Isls

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165



Ostracion farnesii

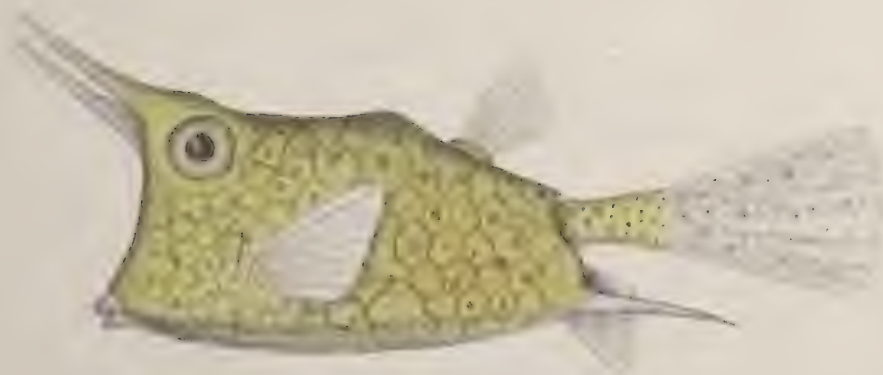
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Ostracion cornutus

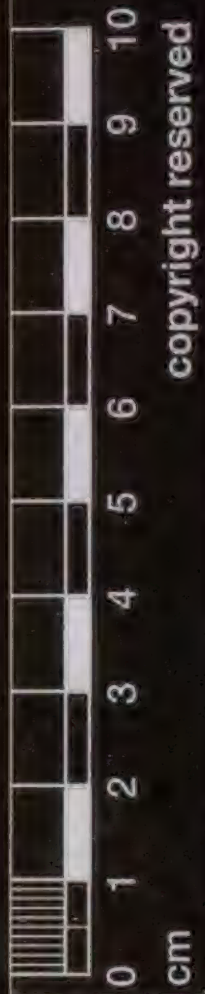
242

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167



Ostracion cornutus

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Ostracion longicaudatus, Günther. 403Plate

D. 1-8; A. 1-8; P. 10; C. 1, 8, 1.

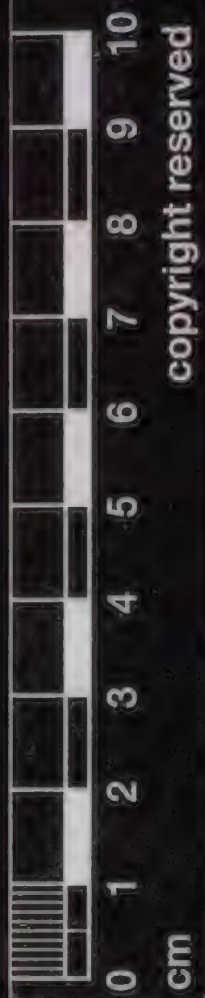
The dorsal region is rounded, slightly ridged along the median line and a small hump-like protuberance in advance of the dorsal fin. The anterior profile of the head is slightly convex between the muzzle and the horns. The eye is large obliquely oval. The anterior horns or spines are rather small, straight, and slightly inclined downwards. The caudal fin is very long, its rays bifid, and together with its peduncle constitute half the length of the entire fish.

Sides and back greyish or greyish fawn and each scale or compartment relieved by a small roundish blue dark margined spot. The spots inclining to violet on the back. Belly white or chrome yellow. Ventrals yellowish white. Caudal trunk spotted like the body. Fins colorless, with white or chrome yellow peduncles. Caudal sometimes tinged with chrome yellow marked with large obsolete diffuse amber spots.

Length, 16 in.

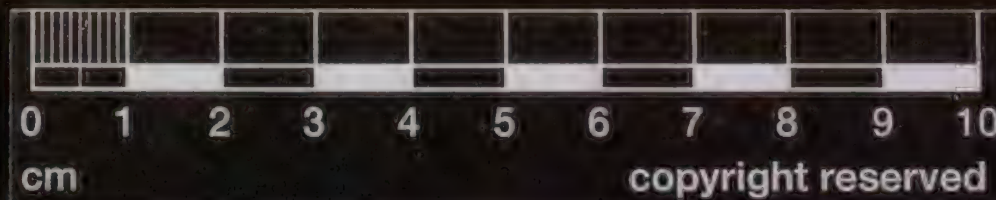
Habitat. Society Isls.

Remarks.—The length of the caudal, its bifid rays and shape of the anterior horns will distinguish this species from the Ostracion cornutus. It also attains a much larger size.

NATURAL
HISTORY
MUSEUM



Ostiacion cornutus



Ostracion cornutus, Linn.

313

Plate

Ostracion cornutus, Linn., Mus. Ad. Vol. 1. p. 89.

" quadrangulus, Grov., Mus. 1. n. 118.

Pisces cornutus, Will. Schttr. Vol. 1. pl. 113. fig. 1.

Ostracion quadrangulus, Seba, Mus. Vol. 3. p. 61, Pl.

24. fig. 8-13.

" cornutus, Gmelin, Tom. 1. pars. 3. p. 1443.

" " Bloch, pl. 133.

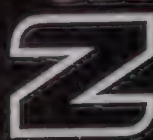
" " Richardson, Rep. Brit. Mus. 1846
p. 200.

D. 1-8; A. 1-8; P. 16; C. 1-8-1.

The anterior profile between the snout and the horns is deeply concave. The eye is large, circular, its diameter entering about three times in the space between the end of the snout and the gill fissure. The anterior horns, which are longer than the posterior, are well developed and curving slightly upwards. A large coniform tubercle occupies the space in the middle of the back about midway between the interorbital space and the dorsal fin. The caudal fin is a little more than half of the length of the head and body, and its rays bifurcate twice.

Color of the sides, soiled yellowish brown, and each bony plate generally with a small circular blue darker margined spot. The interstices of the plates more or less dusky olive which gives the flanks a reticulated appearance. The upper surface is of a deeper tint than the sides, and similarly spotted. Belly uniform lemon yellow. The peduncle is dotted with blue and olivaceous brown. Irides olive brown, becoming golden toward the cornea. Pectorals colorless. Dorsal and anal have pale yellow rays. The caudal is generally marked with a few large diffuse obsolete, bluish white and dusky green spots.

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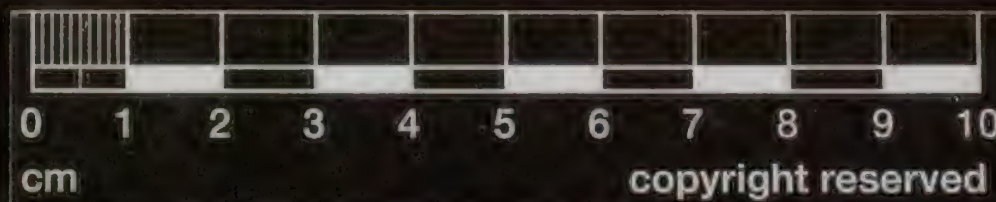
0 1 2 3 4 5 6 7 8 9 10
cm





Ostia cornutus

Ostia cornutus



N NATURAL
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MUSEUM

Hypselogerrhon
? *Tetracodon* No 295-

D. 9; A. 7; P. 15; V. 1, 1, 3, 3, 1, 1.

Body oblong, gradually becoming wider than deep posteriorly, and the is nearly straight from the eyes to the dorsal fin. As seen in profile the body has a slender appearance and gradually tapers away from the base of the head to the tail. The lower line is considerably tumid beneath the gill openings, and the interopercles are not very lax, so that the power of inflation must be comparatively small. The spines are small, each springing from two roots, and not by any means so closely-set as in the true *Tetracodons*. The head comprises one-third of the total length, caudal excluded. Its upper profile is rather gibbous over the eyes, which latter are large, horizontall, oval in shape, approximating the upper line of profile, and situated twice their own length from the end of the jaw. The diameter of the interocular space, which is transversely concave, equals the distance from the orbit to the angle of the mouth. The nostrils are furnished with a small fleshy lid or flap. The chin is tumid, and the upper line of profile from the end of the upper jaw to the interorbital space is nearly straight with a gentle ascent.

The empty space between the dorsal fin and the base of the caudal

NATURAL
HISTORY
MUSEUM

2

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0 1 2 3 4 5 6 7 8 9 10
cm



295
exceeds the height of the former fin which latter equals nearly half the length of the head. The anal fin is shaped like the dorsal but smaller approaches nearer to the base of the caudal, and both have their anterior portions pointed and their extreme margins very obliquely concave. The pectorals are very large, their upper hinder margin concave, the angle pointed and the lower part convex. The caudal rays are even, but when expanded exhibits a convex margin.

Color of the upper parts bluish ash, decorated with closely-set ferruginous-brown dots which are so disposed as to leave round spots of the ground color. The middle third of the fish is light yellowish and white beneath. The dots on the flanks become larger and paler but do not spread over the white ground beneath. Several rows of brownish spots occupies the space between the pectoral axilla and the base of the tail. Sides silvery, clouded with brown. All the fins are colorless except the caudal which has ferruginous-yellow rays.

Length 5 inches.

Hab. - Sandwich Is.

Native name "Ke-ke".
Probably a Diadema.

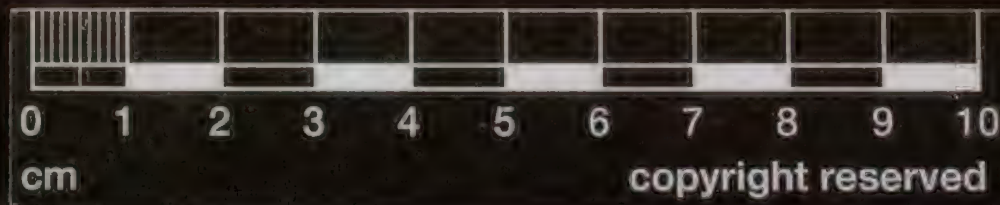
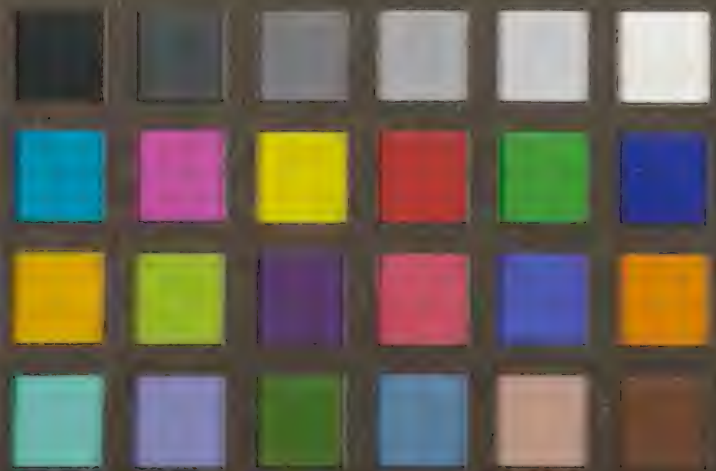




Tetradon hypoclenion

(Faintest of dusky)

Taf.



N NATURAL
HISTORY
MUSEUM

stellatus

Tetraodon ~~viridis~~

D. 11; A. 11; P. 17; C. 14, 3, 1.

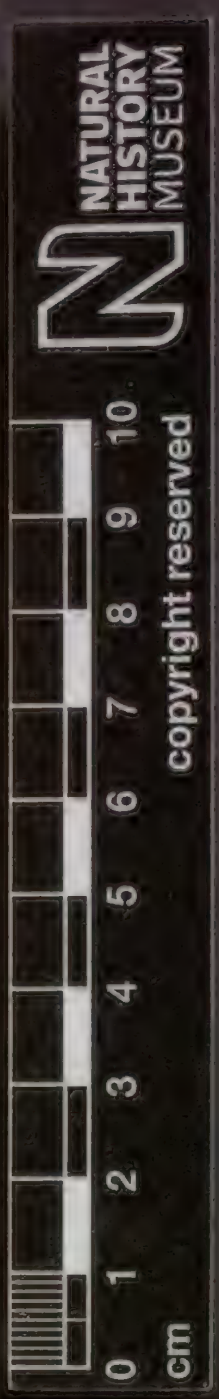
This species has a short thick muzzle which exhibits a slight concavity on its upper line of profile and the lips are slightly granular. The head comprises nearly a third of the total length and is nearly as broad as long. The space between the eyes is broad and concave. Back gently arched. The fins are rather small, all rounded off at their corners.

Color of the living fish deep olive-green, becoming paler beneath, and closely maculated with roundish black spots which disappear beneath leaving the belly immaculate. Sometimes the under parts are greenish yellow, and others have the underside obliquely striped with black. Some have a large black spot in front of the anal fin. Irides dark copper-yellow, cornea greenish-black. Ventrals paler than the body and more profusely spotted. All the other fins are nearly colorless.

Length 9 inches.

Hab. Society Is.

Native name Huc-hue-mao.

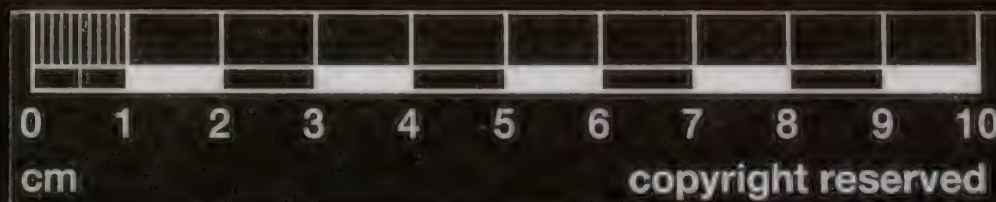


297

471



Tetrodon stellatus
(Eschschaffsch. Inf.)



N NATURAL
HISTORY
MUSEUM

stellatus
Tetraodon saccatus

D. 10; A. 11; P. 17; C. 1, 7, 1.

This Tetraodon can be distended so as to assume a nearly globular form. The segments are ^{so} very lax, that when filled with water the abdomen hangs like a sack as represented in the figure. The spines are minute, closely-set and cartilaginous. Under the lens the skin is tessellated with polygonal plates. The muzzle is very short and stout, its upper profile steep and concave. The space between the eyes equaling two and a half of the greatest diameter of the eyes in width and is rendered concave by the orbits rising above the line of profile. The eyes are oval in shape, their length one-fifth that of the head, which latter constitutes one-third of the total length, and its diameter at its base is as compared to its length is as three to four. The back is gently arched, and the caudal trunk is short and rapidly tapers as seen in profile. The caudal rays are even, though rendered convex by expansion, comprises two-ninth of the total length of the fish. All the other fins have their angles rounded off.

When alive this species is of a bluish-gray above and white beneath. The upper parts and flanks are closely maculated with small roundish blackish-brown spots, which are smaller and more irregular on the dorsal region.

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HISTORY
MUSEUM

2

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0 1 2 3 4 5 6 7 8 9 10 cm

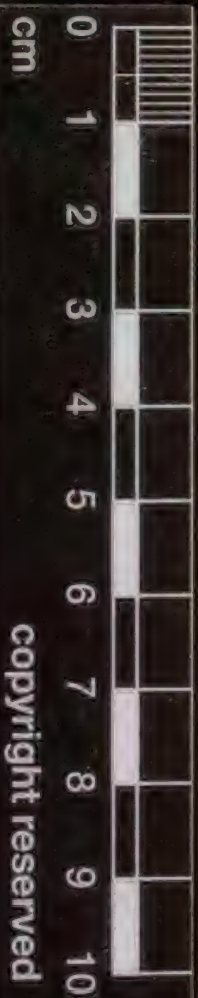


a few deep black oblong spots marks
the lower anterior half of the fish,
and a large one just in advance of
the anal fin. Two or three small spots
may be seen just in advance of the base
of the pectoral fin. The inside of the
mouth is varied with black. Ventrals cupre-
ous-yellow. Ventrals colored somewhat
like the body and profusely maculated
with larger and more irregular shaped
spots. All the other fins are nearly
colorless.

Length $5\frac{1}{4}$ inches.

Hab. Sovieton Is.

Only a single example has
come to my notice.

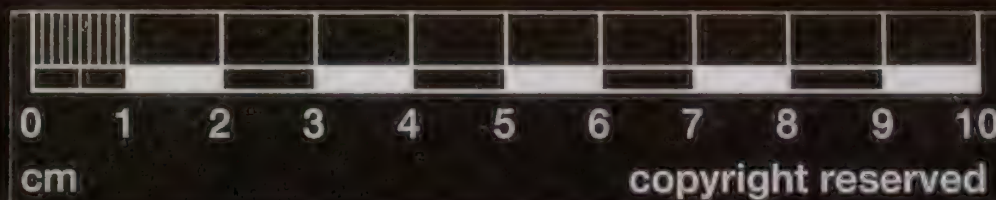
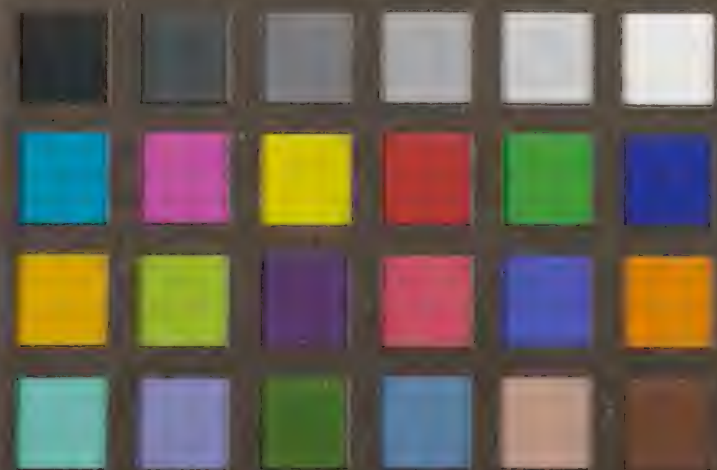


NATURAL
HISTORY
MUSEUM

392
472



Tetrodon stellatus
[*Capallipapilio* Def.]
Taf.



N NATURAL
HISTORY
MUSEUM

396
473

hispidus, var. d
Tetraodon albanusculus

D. 10; A. 10; P. 17; L. 2, 7, 2.

The head comprises one third of the fish, cannot be excluded. The diameter of the eyes equals one seventh the length of the head. The caudal fin is large.

Color dark cinerous above, ash white on the flanks and pure white beneath. The upper parts maculated with round small white spots. Lips pale fawn. Ventrals dusky. Ventrals yellow, with brown clouds. The dorsal, anal and pectorals pale fawn yellow. Caudal the same color and maculated like the dorsal region.

Length, 10 inches.

Habitat: Panama, B.

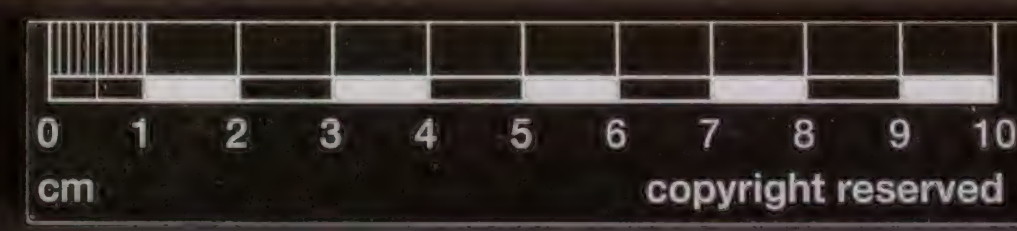
The two examples which I obtained at the above locality, differed more in color or markings. The muzzle is more obtuse, and the upper line of snout between the snout and the eyes more full than in T. citrinus.



Tetrodon hispidus, var. B.

(Fanning Splea)

Taf. 177 Fig. A.



N NATURAL HISTORY MUSEUM

hispidus var. n.
Tetraodon no 299

D. 10; A. 10; P. 16; C. 1, 8, 1.

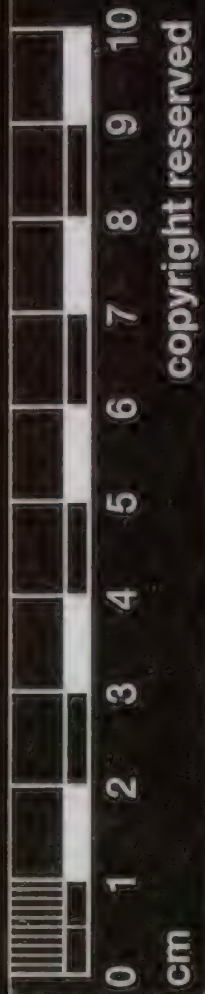
This species is closely allied, if not identical with the one figured on Pl. 9, fig. 344, Voyage of the Samarang. Richardson refers it with a doubt to the *T. hispidus*, Leach, but not of Bloch, which the remarks is deficient in the dorsal spots. Even should this prove to be Richardson's *hispidus*, it cannot be identical with the *hispidus* of old Authors, which latter is a Mediterranean species.

A specimen of our species now before me measuring 9 inches long has the dorsal region gently arched and the teguments are very lax. The head comprises about a third of the fish, caudal excluded. The spines are very blunt and largest on the belly. The muzzle is short, stout, slightly concave above and the lips are thick and granulated. The interocular space is concave, equal in diameter to twice the length of the orbits, which latter rises above the general line of profile.

The caudal is very large, and together with all the other fins have their angles rounded off.

Color grayish-fawn, passing into white beneath, the former ground color closely maculated with roundish white spots, which are surrounded by dark rings, and descend downwards in oblique curved streaks on the white ground beneath. Those behind the

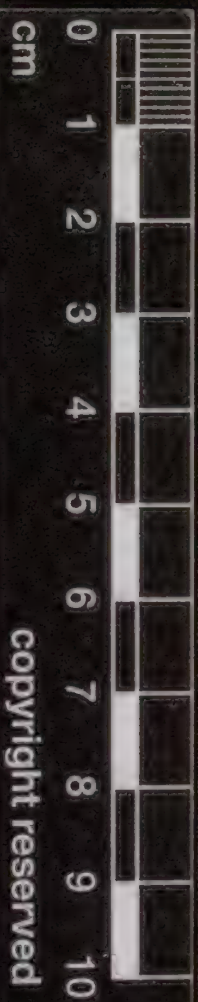
NATURAL
HISTORY
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pectoralis curving anteriorly, and then
on the side of the head posteriorly.
Sometimes the lines running into each
other, and some have a few reticulation
below the chin. The white are surrounded
by broken white lines, and the space
between the gill openings and the
base of the pectorals is black, varied
with yellow and white curved lines.
Lips pale with a faint reddish tinge.
Irides silvery yellow. The basal portion
of the caudal is the same color and
spotted like the body. The rest of the
fin, together with the others have color-
less membranes and amber colored
rays.

Length 9 inches.

Hab. - Society Isls.



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NATURAL
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299

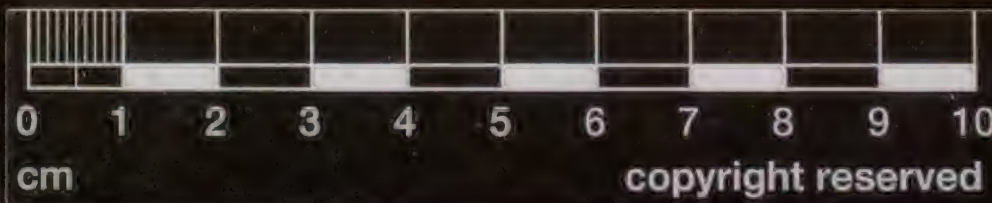
474



Tetrodon hispidus var. *g.*

(Gill & Silliman)

Tap.



N NATURAL HISTORY MUSEUM

kispidus var β *Tetraodon grandimaculatus*D. $1\frac{1}{2}$; A. $1\frac{1}{2}$; P. 16; C. 1, 7, 1.

An alcoholic specimen of this species now before me, measuring nearly 8 inches long, has the dorsal outline considerably arched, which may possibly be caused by contraction in spirits. The head is short and comprises about two-sevenths of the total length. Its upper line of profile from the end of the snout to the interocular space is slightly concave. The thickness at the base of the head is a little less than its length. The eyes are oval in shape, their length entering five times in the side of head. Their orbitaries abut the line of profile, so that the space between them is profoundly concave. The snout is obtuse, and the lips are thick and granulose. The belly is tumid and capable of great extension.

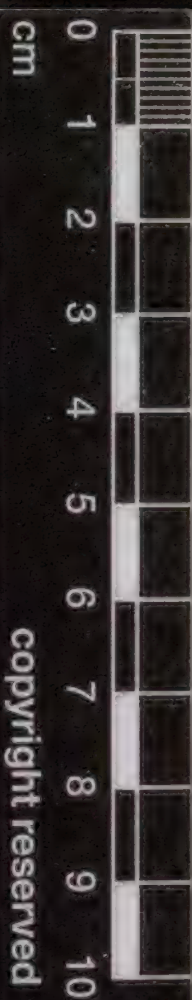
The color as noted from fresh specimens is grayish on the upper parts, passing into white beneath, and the top of head dusky olive. Head, body and basal half of the caudal fin maculated with small round dusky margined white spots, which are larger and more remote on the back, less developed on the head and quite small on the caudal trunk. The upper part of the body is marked by several large diffuse olive-black spots. Curved white lines mark the region of the orbits and gill apertures.



Downward and forward from the pectorals
may be seen several short oblique yel-
lowish olive stripes and a few oblique
buff yellow ones marks the middle of
the flanks, all directed downward and
backward. Irides yellow, with an inner
brown ring, and margined with orange.
The caudal is rather paler than the
back, but becoming quite dark along
its hinder margin. Pectorals pale amber
yellow. Dorsal dusky. Anal paler.

Length 9 inches.

Habitat. Society Isls.



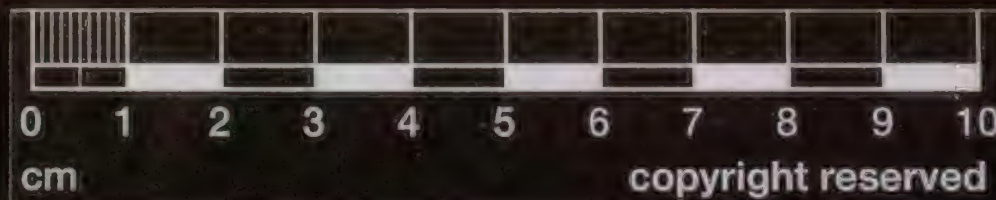
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Tetrodon hispidus, var. B

(*Aplocheilichthys hispidus*)

Taf. 177 Fig. 13



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Tetraodon ^{regani} ~~grandis, f. regani~~

D. 2/9; A. 2/9; P. 18; C. 1, 8, 1.

This remarkable species is probably the largest in habiting the South Seas, and attains a length of over 2 feet. The tegmental spines are very small, scarcely protruding beyond the skin, and less prominent on the belly than above. The lateral line may be seen forming an arch over the pectorals but not continued behind the dorsal fin; anteriorly on the temples it divides into two branches, one frames over the head and unites with the opposite line, and the other curves downward and backward on the cheek, whence it turns upward and joins a similar one on the opposite side of the head.

The head constitutes a third of the fish, caudal excluded, and exhibits a depression on the snout, otherwise the outline is a regular continuation of the regular curvature of the back. The lower line of the head is much more full than above. The snout is obtuse, the lips bulky and granulose. The eyes are situated beneath and not over with the upper line of head, and the space between them is slightly convex. The dorsal region is broad and flattened. The greatest thickness being one-fourth of the total length, caudal excluded.

Color uniform light bluish-grey, everywhere except the belly covered by crowded slate-blue small spots, irregular.

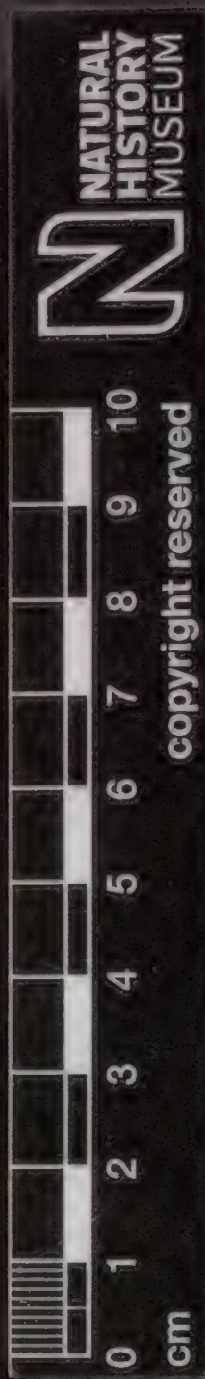


short curved lines, and larger angular spots in the dorsal region, which leave only linear spaces of the ground color. Ventrals golden yellow, shaded off with slate blue.

Length 2 feet 4 inches.

Hab. Society Isls.

A very rare species of which we have seen but the single example now before us.



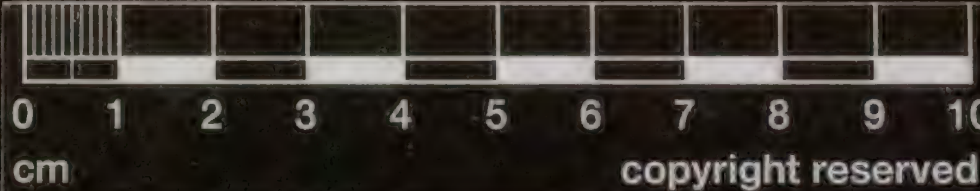
Tetrodon lineatus Valenciennes, *Poiss.* VIII.

Tetrodon lineatus Valenciennes, *Poiss.* VIII.



Tetrodon regani
(*Papiliopterus* Raf.)
Taf. 175

Tetrodon lineatus Valenciennes, *Poiss.* VIII.



NATURAL HISTORY MUSEUM

rigropunctatus var. *citrinella*

Tetraodon citrinus, Gunther

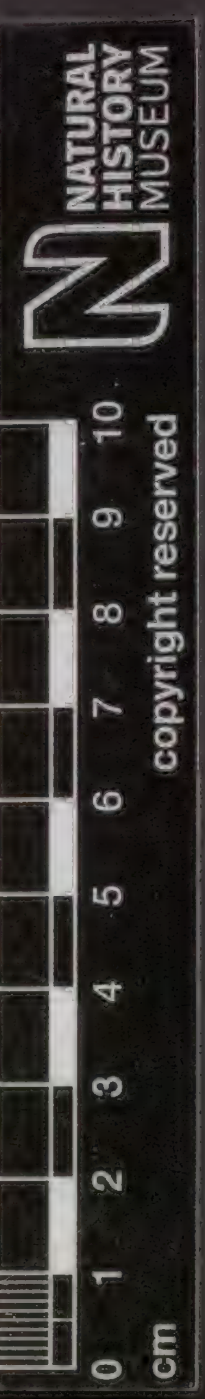
D. 10; A. 11; P. 12; V. 1, 2, 1.

The head falls a little less than a fourth of the fish, or more exactly a third, caudal excluded. The eyes are horizontally oval, their length entering five times in the length of the head, and three times in the width of the interocular space. The spines are closely set, short and obtuse. Lips granular.

Color nearly uniform lemon yellow. The lower parts with bluish white mottlings, or rather bluish white with lemon yellow mottlings. Lining of the opercular region and a large spot on the pectorals, black. Sides and lateral with grass green and orange. The margins of the fins pale.

Length, 10 inches.

Habitat: Society Is.





Tetrodon nigropunctatus var. *citrinella*
(*Seipallia* after Seale)



meleagris
Tetracodon meleagris, Sol.

Tetracodon meleagris, Solander, Ill. S.
 = Richardson, Voy.
 Sulphur, Fishes, p. 122,
 pl. 181, fig. 1-2.
 = Richardson, Voy.
 Samarang, Fishes,
 p. 19.

D. 1/10; A. 1/10; P. 14; V. 1, 4, 3, 1.

This is probably the *T. lacrimatus*,
 descr. in the Zoology of the Voyage, Grey-
 cinct is a short description of *Chirocentrus*,
 which was obtained at the Sandwich
 Isls. I have also collected it at that
 group.

In this species the integuments
 hang very loose, more so than any spe-
 cies with which I am acquainted. The
 head constitutes one-third of the total
 length, caudal fin excluded. The dorsal
 region is slightly arched, and there is
 a depression in the muzzle. The orbits
 rise above the upper line of profile
 and their interspace is concave. The
 caudal is small.

Color brown, blackish-brown
 above and everywhere maculated
 with small pale or whitish spots,
 which are larger and of an oval shape
 on the belly, becoming smaller and
 round above. Irides greenish-yellow,
 with an outer brown ring. All the fins
 the same color as the body, and profusely
 maculated with similar round spots.
 The dorsal anal and pectorals shaded

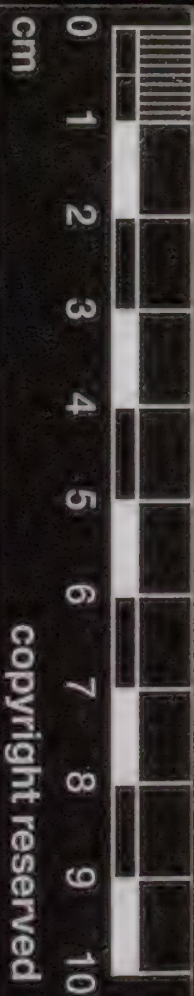
off with amber-yellow.

The dead fish changes more or less pale grayish and the spots become whiter.

Length, 10 inches.

Hab. Kingsmill, Sandwich, Samoa, and Society Isls. (Garrett)

Native name at the latter group "Hue-hue-te-te..."



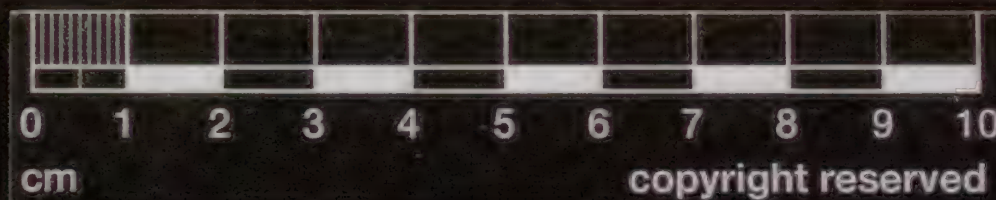
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Tetrodon meleagris

(*Hieroglyphis* Raf.)

Taf. 174



N NATURAL
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Isotodon ^{*isolardii*} No 389

D. 9; A. 8; P. 16; C. 1, 4, 4, 1.

The upper and lower outlines are gently arched, and the snout is rather long and concave above and beneath. The greatest depth is nearly half the total length caudal excluded. The head comprises a third of the fish caudal excluded. The orbits are elevated above the line of profile, and the space between the eyes is concave. The eyes are circular, their diameter entering four times in the length of the head. The trunk of the tail is deep, and the caudal fin is large, and when expanded is convexly rounded behind. The dorsal and anal are rounded, and the pectorals are broad and slightly tapering ~~laterally~~ beneath.

Color cinereous, brown or brown, paler on the sides, and fading into lemon yellow on the belly and light copper-red beneath the throat. Large transverse brown clouds on the upper parts. The head, body, and caudal trunk maculated with closely-set dark margined emerald green dots and small spots which are mostly round. Those on the back are larger and more remote than those on the flanks. Back of the eye and along the lower parts there are more oblong and on the latter portion of the fish there are ~~inclined~~ ^{as above} longitudinal series. On the head and caudal trunk they are very small, while those on

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the lower line of head are the largest and oblong, similar colored lines encircle the end of the muzzle and radiate from the hinder margin of the orbits. The belly beneath is trilineate with blue dark margined horizontal lines. A blue line marks the base of the dorsal and anal fins. Sides with an orange or vermilion red, a sub green and an inner golden ring, or sea green. The dorsal anal and pectorals colorless, with their rays edged with black. The caudal is the same color and dotted like the flanks, becoming vermilion red posteriorly, where the dots assume vertical interrupted lines.

Length 4 inches.

Hab. Society Isls.

Probably *T. punctatus*, Sol. M.S.



N
NATURAL
HISTORY
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Tetraodon No 390

480

D. 9; A. 9; L. 17; C. 1, 1, 4, 4, 1, 1.

An example of this *Tetraodon* now before me, is of a more elongate form than usual in the genus, and is slightly compressed. Both upper and lower outlines are gently and similarly arched, the greatest depth being at the base of the head, which latter comprises a fourth of the fish. The eyes are rather small, oval in outline, their length as compared to that of the head is as one to six, and are inserted considerably below the upper line of profile and a little nearer to the gill fissures than the end of the snout. The muzzle is obtuse, the upper and lower lines gently arched, and the nasal tentacula is a little nearer the eye than the end of the snout. The teguments are closely beset with rigid bristle-like short spines, which are the most prominent on the abdominal region. A line extended from the anterior base of the dorsal fin to the end of the caudal, then transferred forward does not quite reach the end of the snout. All the fins are rounded off at their angles. The caudal is large, being a trifle longer than the head. The upper parts are dusky gray white beneath, and longitudinally lined with black, the upper lines not continued in advance of the eyes. Several of the lines commence on

NATURAL
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MUSEUM



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0 1 2 3 4 5 6 7 8 9 10
cm



on the middle of the head, curve down-
ward and backward, but disappear be-
fore reaching the anal fin. Sides
yellow. All the fins light straw yellow.

Length 8 inches.

Hab. Kingsmill Is.

cm

0 1 2 3 4 5 6 7 8 9 10

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N

NATURAL
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Tetraodon No 391

sp. ? s. pallidus ?

D. 4; A. 7; P. 17; V. 5, 4, 1.

This minute species, of which I have seen 40 or 50 examples, is closely allied to *T. insignatus*, Rich., and *T. ocellatus*, Bennett. The former species, which is figured and described in the fishes, Voyage of the *Samarang*, is much larger than this species. The muzzle longer and more slender, and the characters of the markings differ considerably.

The dorsal region is considerably arched, more so than the ventral region. The head comprises nearly a third of the fish, and the thickness at its base equals half its length, or nearly one-sixth of the total length. The upper line of the muzzle is gently ~~convex~~ concave. The eyes are oval, their greatest diameter as compared to the length of the head is as two to seven. They are situated contiguous to the upper line of profile, just twice their own length from the end of the snout and half that distance from each other across the interocular space, which latter is flat or slightly concave. The muzzle is short and obtuse. The spines on the body are not very closely set.

Color (in spirits) dark slate, becoming gray beneath, and except the belly covered with a profusion of light blue small round spots encircled with white rings. The spots are larger on the back, and oblongitudinal similar colored stripes radiate from the pectorals.

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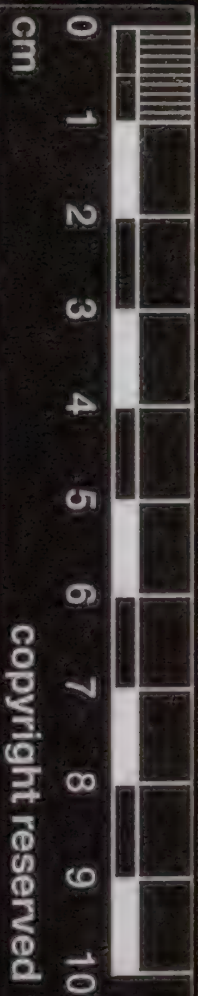
cm



half of the orbits. A large blue spot,
enclosed in a black ring, marks the base
of the dorsal fin. The caudal is ocellate
like the body and margined with the
same hue. All the other fins nearly
colorless.

Length 1 1/2 inches

Hab. Kingsmill Isln.



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Tetradodon lineatus
(*Surge wrasse* Raf.)



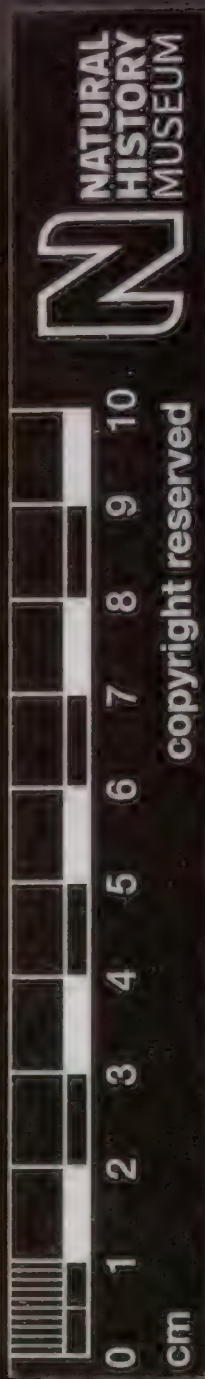
Tetradodon



Tetradodon

481

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Lycotris

Diaden No 294 (4)

D. 15; A. 15; P. 22; C. 1, 7, 1.

The head of this Diaden is as broad as long, which latter measuring to the gill openings equals a fourth of the total length of the fish. The upper surface is flattened, becoming slightly concave transversely between the eyes, which latter are very large, sub-circular in shape, and their diameter equals one-fourth the length of the head. The muzzle is short, the lips granulated, and the upper profile in advance of the eyes is concave. The thickness at the base of the head is about equal to the depth of the body, and both dorsal and ventral outlines are gently arched. The integuments are loose, and, excepting the muzzle, the region of the eyes and a space round the base of each fin, is garnished with rather long slender straight spines. Those on the top of the head are the largest and more curved than the others, all becoming shorter on the hinder parts, and the caudal trunk exhibits but few very abbreviated ones in its upper and lower portions. Each spine springs from a base having two roots running at right angles so that they are shaped like the letter T, and each have a more or less developed posterior membrane.

The pectoral fins, which

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are on a line with the snout, are very broad, rounded on their corners, and slightly concave posteriorly. The caudal fin is small, posteriorly rounded off, and in length equals about or a little more than half that of the head. The space between the dorsal fin and the base of the caudal equals the height of the former, and the anal is a little nearer to caudal. Both fins are very oblique on their extreme margins, their anterior portions rounded off, and the anal exhibits a rather longer base than the fin above.

The upper half of the fish including the dorsal and caudal fins is of a purplish slate, and rather closely streaked with small round blackish brown spots. The lower parts are pure white and immaculate. Sides bluish clouded with brown.

Length 15 inches.

Hab. Society Is.

Native name Notarus



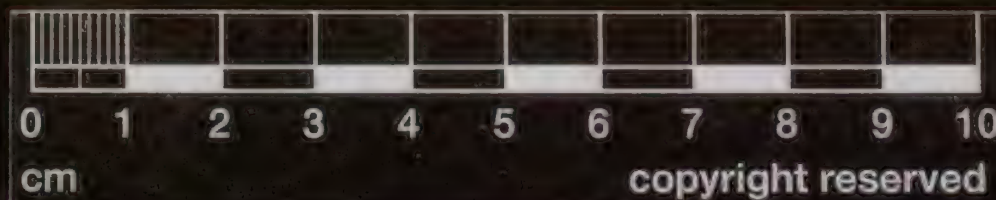
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Diodon hystrix



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Isoodon grandimaculatus ^{bleekeri} ~~garr.~~

D. 17; A. 9; P. 24; C. 17, 1.

This species is short and very broad, depressed along the dorsal region, and the head comprises a third of the total length, caudal excluded. The muzzle is even shorter than in the preceding species, and more precipitate in its ascent to the interocular space. Its upper line is considerably concave, and the thick lips are papillose. The eyes are large, being situated much nearer to the end of the snout than the gill openings. The broad space between the eyes is transversely slightly concave. The spines which are shorter than in *I. demimaculata*, are most developed immediately behind the pectorals, and each springs from three roots. They extend as far as the muzzle, posteriorly to the end of the anal base, and smooth spaces may be observed round the eyes and base of fins.

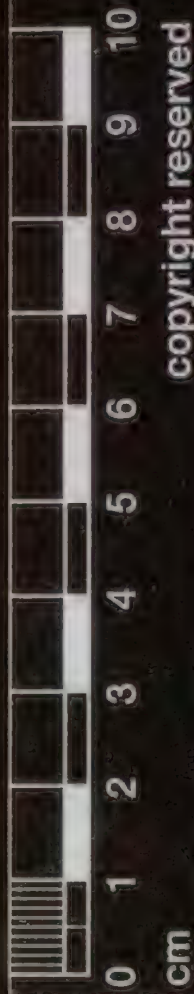
The vertical fins are small rounded off at their angles, and the dorsal and anal are not so oblique on their extreme margins as in the preceding species. The pectoral fins are shaped the same as in *I. vermiculata* but situated higher up in a horizontal line with the eyes.

The upper parts of the head and body are of a pale fawn yellow, passing into grayish along the flanks and white beneath. The dorsal region is unadorned.

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with five very large blackish-brown spots which are margined with white, one elongate oval in shape, crosses the occiput, an oval one above each pectoral fin, a transversely oval one in advance of the dorsal fin, and the fifth includes the base of the dorsal fin. A vertically oblong similar colored spot in advance of each gill aperture, and a bordered band of the same line starts from the lower limb of each orbit, descending to near the lower line of the head, whence it suddenly curves up to the lower jaw and joins the one on the opposite side. Irides brown becoming silvery toward the corner, which latter is blue-black. Fins light yellow.

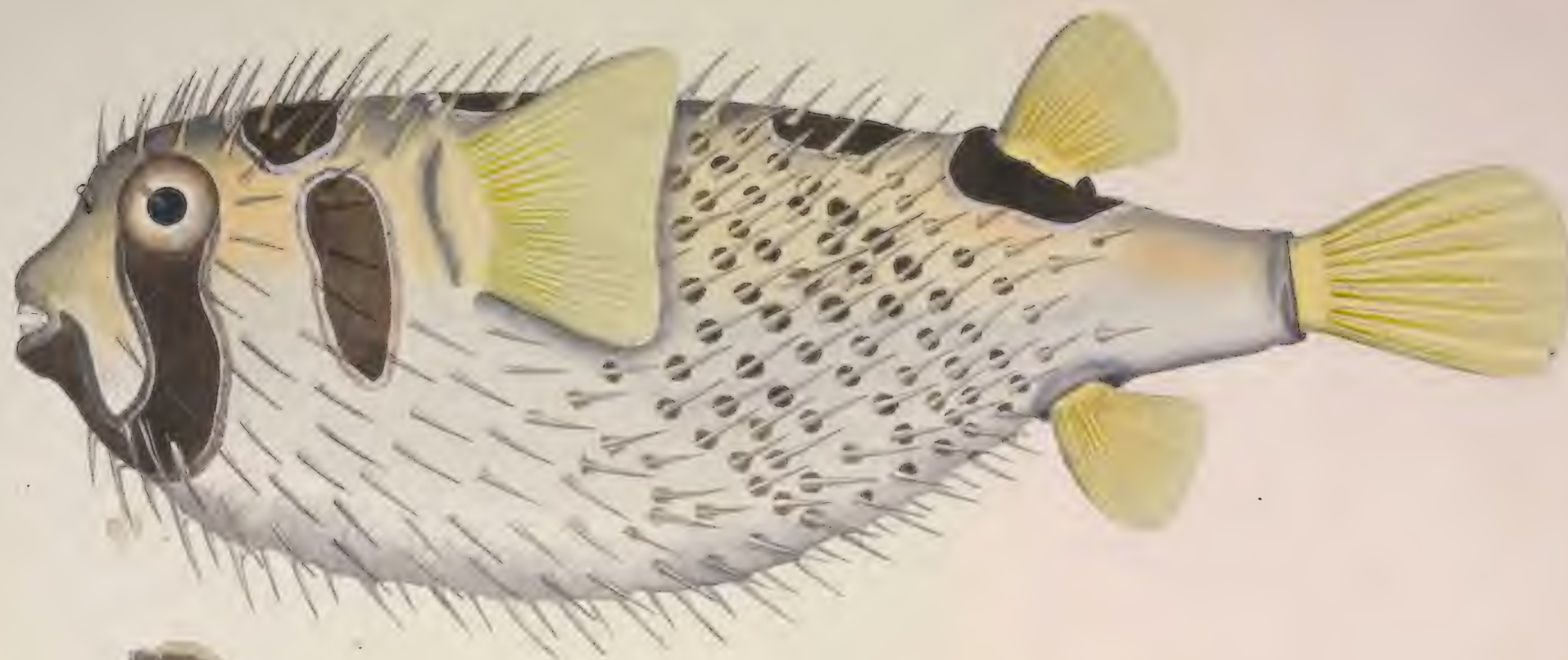
Length 14 inches.

Hab. Society Isls.

A very rare species called by the natives To-ta-na.

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Arodon fleckeri

[*Sp. 183/1834-1835*]

Taf. 178.



Diadon lisogenys.

D. ?; A. ?; P. ?; V. ?.

Of this curious Diadon I can give no detailed description except as taken from a colored drawing.

As viewed in front it has a slender appearance and the belly is tumid, and reticulated with shallow furrows. The spines are small, and most numerous on the belly, and excepting the interocular space not extending beyond the hinder limb of the orbits. They extend back as far as the end of the dorsal base. The head comprises more than a fourth of the fish, and the eyes are very large, horizontally oval in shape, and contiguous to the upper line of profile. The muzzle is short. All the fins, except the pectorals are small.

The dorsal region is blackish-brown becoming paler on the flanks, and white beneath. Upper parts maculated with small round black spots.

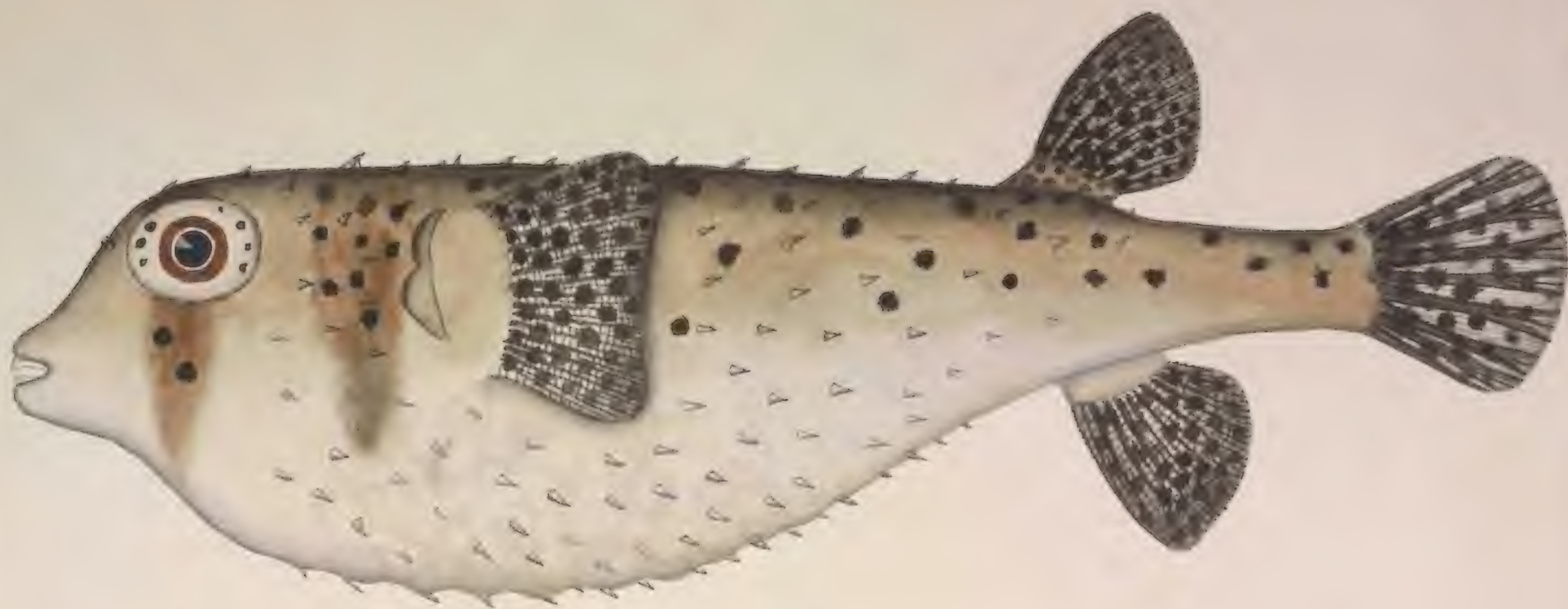
Length 14 inches

Hab. Sandwich Isls.

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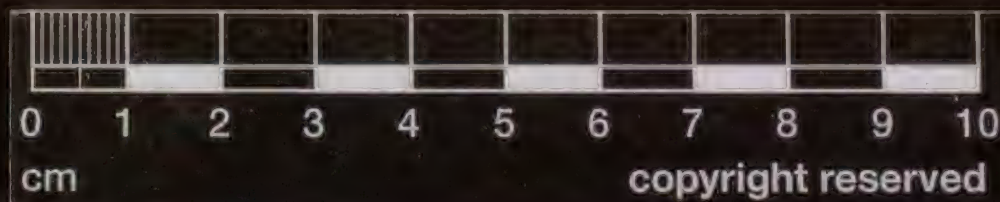




Chilomycterus lissogonys

(Bautling, *Reptilien*)

Taf. 110



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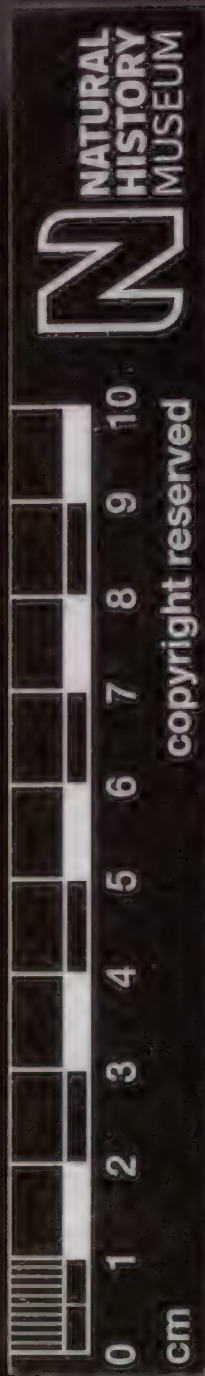
Orthagoriscus No 303

The general form of this species is oblong oval, strongly compressed and the greatest depth of the body which is on a vertical with the base of the pectorals is just half the total length of the fish. The posterior extremity is convex and waved in its outline. The dorsal and ventral lines are nearly similarly arched. The skin is thick and asperous with minute acute papillae. The head is short and rounded in front, being as compared to the total length nearly as one to three. The upper profile of the head exhibits a slight concave depression in front of the eyes. The eyes are small and provided with a fleshy veil which at the will of the animal completely covers them. In front of the eyes there is an elongate depression in which are situated the nostrils, two in number, approximating and of an oblong shape. Cheeks inflated. Mouth small, without any appearance of lips, and the jaws armed each with a trenchant bony point as in the genus *Diadema*.

The dorsal and anal are opposite, similar in shape, sub-triangular, of equal height, pointed and placed far on the posterior portion of the body. The pectoral are small rounded and placed on a horizontal line with the mouth.

Color dark grayish-black which passes into grayish on the flanks beneath. Irides silvery variegated with brown.

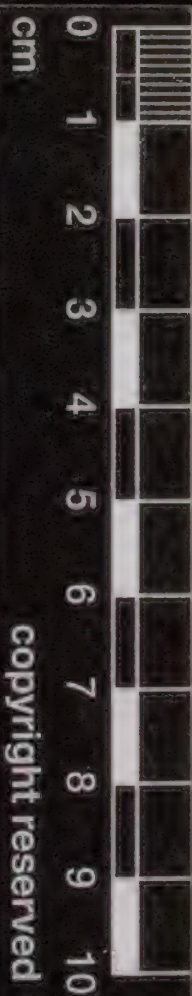
The following series of measurements were taken from the example caught.



	Feet - Inches
Total length	6 - 10
Greatest depth body	3 - 5
From tip to tip vertical fins	7 - 9
Height of dorsal fin	2 - 9
Length of pectorals	1 - 0
Diameter eye	2 ⁹ / ₄

Probable weight 500 lb.

The specimen examined was captured in Lon. 146° 38' 15" W., Lat 00-44' South, Pacific Ocean. The stomach contained half digested remains of *Carinaria* and *Peripeta*.



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Or thagoniscus mola

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Carcharias melanopterus, Lat.

We have now before us a specimen of this species measuring two feet, and as the natives assure me it attains a length of 10 to twelve feet. The native name is *shufa*.

Its color is grayish white beneath and gray or bluish gray above. Sides yellowish silver. All the fins more or less tipped with deep black.

The head, measuring to the anterior gill aperture is about one-sixteenth of the total length and as viewed in profile is acutely conical, gently curved from the tip of the snout to the ~~caudal fin~~ origin of the dorsal fin. As viewed from above the head is broad, strongly depressed and rounded in front. The width just behind the eyes falls a little short of eight times in the total length. The small eyes are roundly oval, and inserted so that they are over the end of the lower jaw. The nostrils are about midway between the eyes and the end of the snout; they are large, have two fissures each provided with a triangular lobe. Mouth not large, the lower jaw strongly arched from side to side. The teeth in the upper and lower jaws are disposed in two rows, acute triangular, with serrated edges and the lower ones more slender than the upper.

The body is rather slender, the greatest depth at the origin of the first dorsal vertebra seven times in the

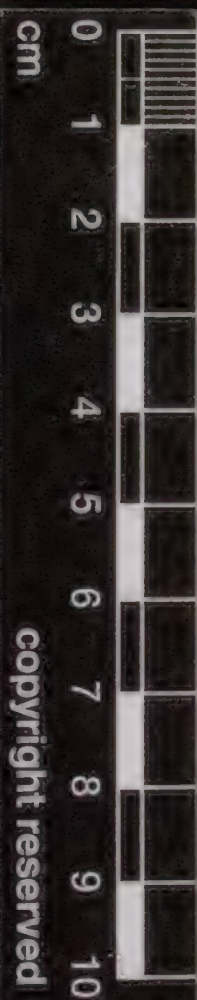
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Total length and the thickness at the same place is two thirds the above mentioned depth.

The first dorsal is placed nearer to the end of the snout than the base of the caudal fin, and at a point just midway between the pectorals and ventrals. Its height nearly equals the depth of the body beneath its own base, and its extreme margin is deeply concave. The second dorsal is separated from the first by a free space equalling the length of the head (from snout plate). The anal is the same size, shape, and placed opposite to the fin above. The empty space between the anal and ventrals is the same as distance from the eye to the gill openings. (Shape of the other fins see plates)

Nat. Society Isl.



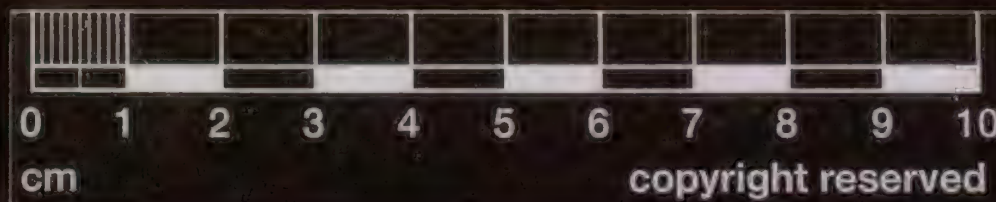
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Carcharias melanopterus

315



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*Tricodon oceanus**Carcharias? No. 316*

This species attains a length of 8 to 10 feet, and is called by the Tahiti native *Ma-u-u-u-3oa*. Our drawing and description is drawn from a young specimen measuring $2\frac{1}{2}$ inches.

The body is slender, elliptical in profile, and the snout is very much depressed, pointed when viewed laterally, rounded in front and the sides gradually taper from behind the eyes to the tail. The head, measuring to the hinder gill fissure, comprises about one-fifth of the entire length. The nostrils are transverse and placed just beneath the lateral angle of the head, midway between the eye and the end of the snout and furnished with a triangular flap. The eye is oval. Interorbital space convex and equals half the length of the head measuring to the posterior gill fissure. The mouth is broader than long, not extending more than half the distance from the eye to the end of the snout. Teeth?

The first dorsal is inserted a triple nearer the base of the caudal than the end of the snout, the tips of this as well as all the other fins rounded off. The extreme margin is deeply concave and in height equals the depth of the body. The second dorsal is similar in contour to the first, but is only half as high.

The anal fin is of the same shape and size, and placed opposite to the fin above.

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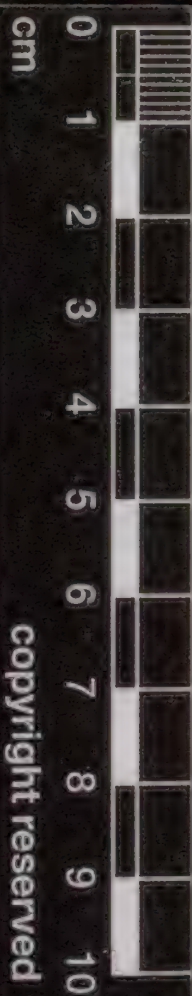
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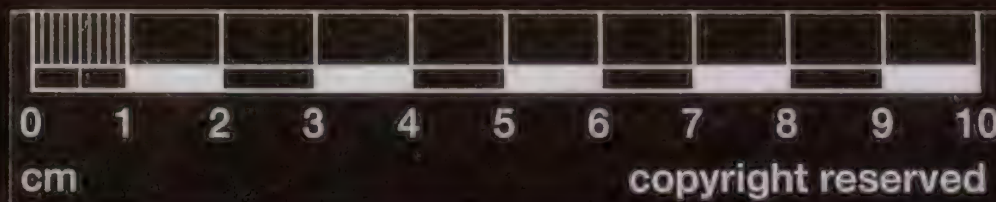
316
The ventral, trapeziform, scarcely concave beneath not so deep as the anal fin and inserted and their point of insertion is just midway between the pectorals and the base of the caudal.

The pectorals are larger than the first dorsal and the caudal upper lobe is more than half the length of the body; the lower lobe is less than half as long as the upper one.

Color grayish slate along the dorsal region passing into dull white beneath. Ventrals pale gray. The two dorsals and caudal tipped with pinkish white, anal dark slate. The ventrals and pectorals white.



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*Triaenodon obesus*

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Zyasa No 395

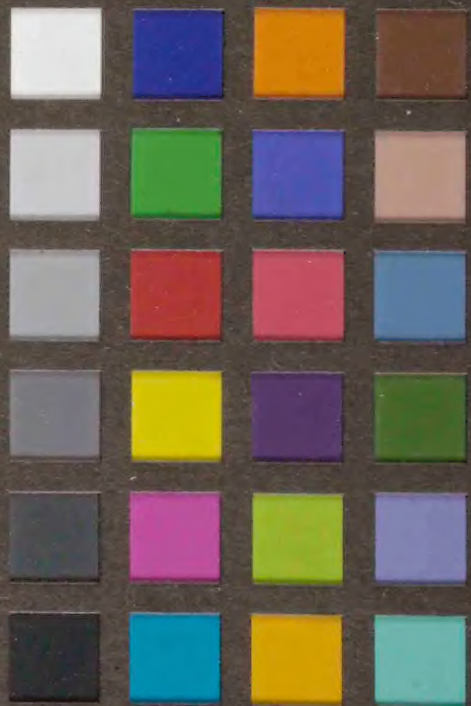
A specimen of this species now before me measures 23 inches in total length. Adults attain a length of 9 to 10 feet. The native who brought me the specimen says ~~that~~ there was about 20 taken from the ~~adults~~ female. The native name is Mo-ta-ma-ta.

The outline is narrow elliptical, both upper and lower outlines nearly similar in their curvature. The greatest depth of the body which takes place at the base of the first dorsal is as compared to the total length as three to nineteen, and the thickness at the same point is a little more than half the depth just alluded to. The integuments are slightly asperous when the hand is drawn anteriorly over the surface. The lateral diameter of the head as compared to the total length of the fish is as one to four. Its anterior margin is arched and undulated. Measuring to the first branchial fissure, the head enters six and a half times in the entire length. Lower jaw acutely rounded.

The anterior dorsal fin is a little nearer to the pectorals than the ventrals; its height is a trifle less than one-eighth of the total length of the fish and its upper margin is deeply emarginate. The second dorsal is separated from the first by a free space equal to the distance between the pectorals and ventrals. (Form see plate) The anal fin is a little longer than the

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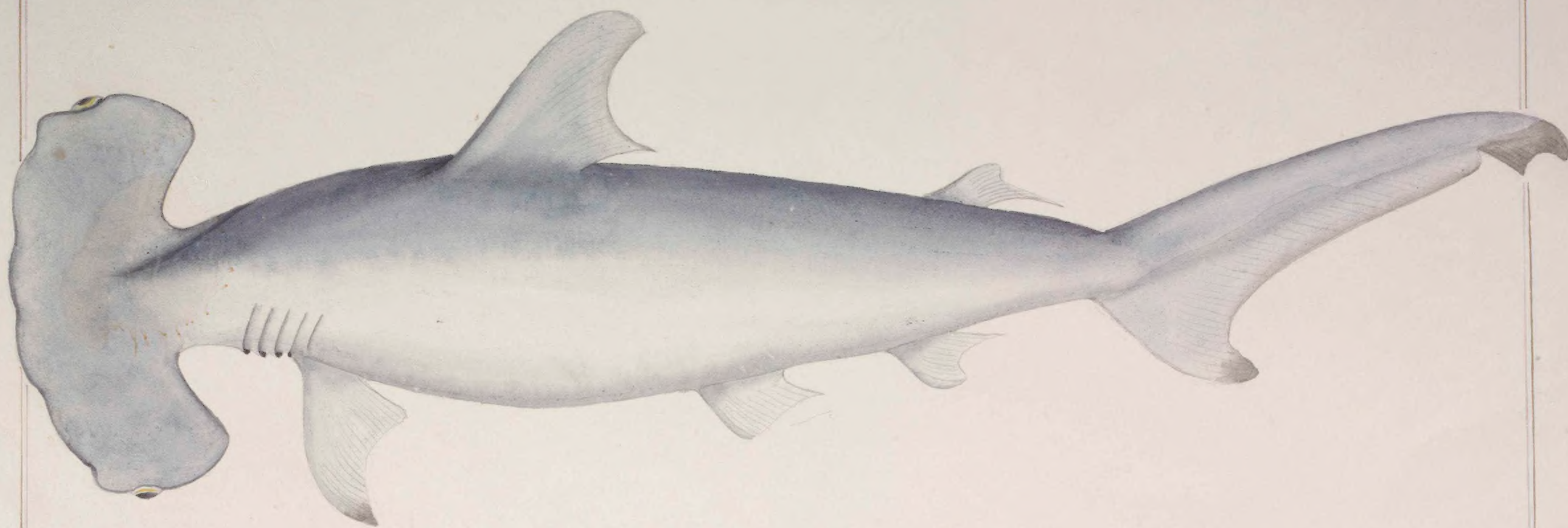


fin above, more anterior, the emargination
in its lower edge more profound than that
fin. The ventrals are separated from
the anal by a space nearly equal to
the first dorsal base, and a little nearer
to the latter fin than the second dorsal.
(Form see plate.) The pectorals are a little
in advance of the first dorsal. (Form see Pl.)
The upper lobe of the caudal fin in
length equals the empty space between
the pectorals and ventrals. The lower lobe
as compared to the upper is as two to five
(Form see plate.)

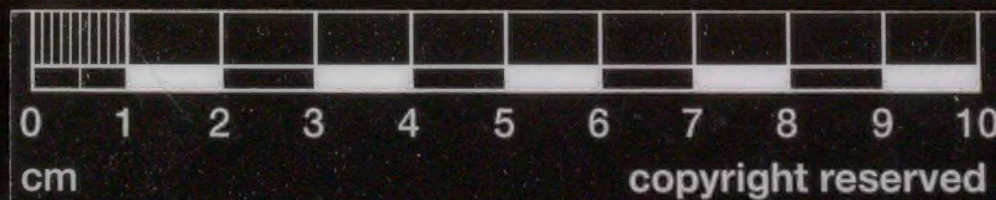
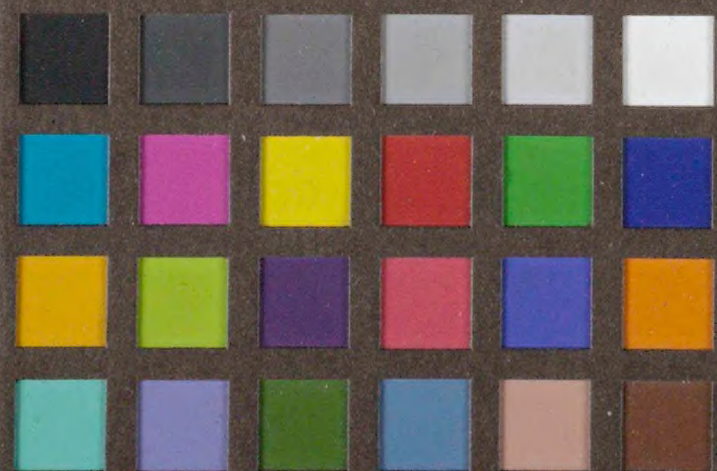
Color bluish gray, white be-
neath.

Hab. Society Is.





Zygaena zygaena



Goniobatis meleagris, Agass.

Proceedings Boston Society of Natural
History, Vol. 6, p. 385. 1858

The length of the disk which is wide rhomboidal in smooth, measuring from the end of the snout to the hinder termination of the pectorals is as compared to the greatest width eleven and a half to twenty and a half. The width being much greater than the length, the measurement being in inches. The anterior outline from tip to tip of the pectorals is gently and regularly arched, the arch interrupted by the prominent head. The posterior margins of the pectorals are but slightly concave and minutely crenulated. There is a large deep furrow on the top of the head formed by the prominent orbits in front, and reaching behind the spiracles. Snout acutely rounded, produced and slightly turned upward. Spiracles just behind the orbits, oblong oblique. The eyes which are not visible from above are ovalish and their cornea is vertical elliptical. There are five pair of branchial fissures beneath. The palate is the widest behind, the plates obtusely angular with their rounded edges anterior. The ventrals are small, rounded behind and extend much behind the pectorals. There is a small quadrangular fin on the tail just in advance of the spine. The tail is very much elongated, slender, and in the specimen now before us measures

